

35,397



PCT

WORLD INTELLECTUAL PROPERTY
International B

INTERNATIONAL APPLICATION PUBLISHED UNDER

WO 9607146A1

(51) International Patent Classification 6 :

G06F 17/00

A1

(11) International Publication Number:

WO 96/07146

(43) International Publication Date:

7 March 1996 (07.03.96)

(21) International Application Number: PCT/US95/11181

(22) International Filing Date: 1 September 1995 (01.09.95)

(30) Priority Data:

08/299,499

1 September 1994 (01.09.94)

US

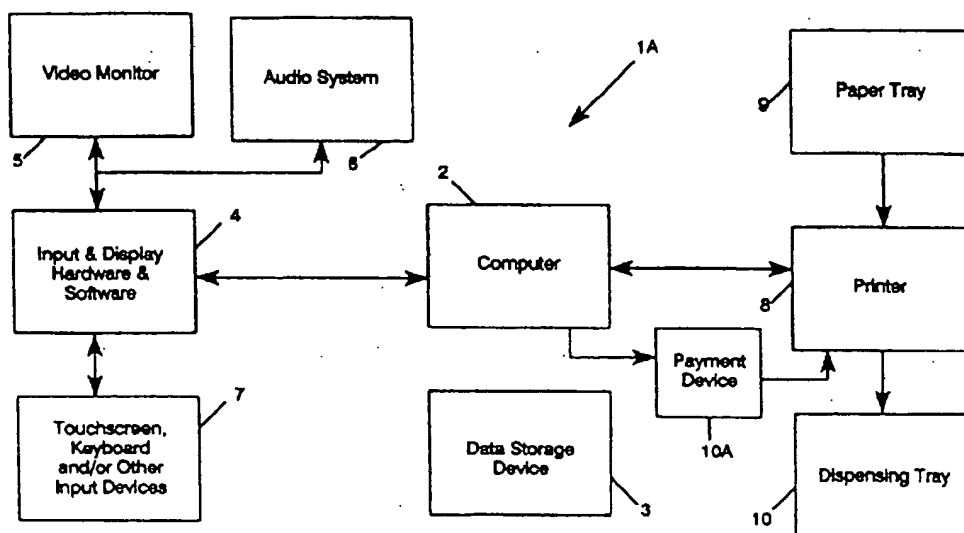
(71) Applicant: AMERICAN GREETINGS CORPORATION
[US/US]; One American Road, Cleveland, OH 44144 (US).(72) Inventor: JACOBS, Herbert, H.; 1708 Caminito Ardiente,
LaJolla, CA 92037 (US).(74) Agent: PHILLIPS, Tara, A.; Calfee, Halter & Griswold,
1400 McDonald Investment Center, 800 Superior Avenue,
Cleveland, OH 44114 (US).

(81) Designated States: AU, CA, GB, MX.

Published

*With international search report.**Before the expiration of the time limit for amending the
claims and to be republished in the event of the receipt of
amendments.*

(54) Title: METHOD AND APPARATUS FOR STORING, RETRIEVING AND DELIVERING PRODUCT DATA



(57) Abstract

An apparatus and method of storing, selectively retrieving and delivering product data is disclosed. Product data files, product lists, product directories and allowable customer data entry sets are stored in a data storage device (3). The customer is asked to specify criteria relating to product need or desire through the use of an input device (7). Customer data entry sets are selected which best correspond to the criteria. The apparatus is thus able to retrieve and display, through the use of the computer (2) and video monitor (5), a variety of products in response to any given customer input and is able to respond to many different kinds of customer entered criteria.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

Method and Apparatus for Storing, Retrieving and Delivering Product Data

5

FIELD OF THE INVENTION

10 This invention relates to machines and methods that store, retrieve and deliver data. More particularly, the invention relates to machines and methods that store product images, video data, audio recordings or other data in digital or analog form and retrieve portions of such data in response to data entries by a customer. These machines and methods also display the retrieved data portions to the
15 customer and allow the customer to select and, in some cases, modify data relating to the product he desires. Then the data may be delivered to the customer in the form of a printed product, a sound recording or a video image or the customer may be allowed to place an order for the data or a related product. Examples of such machines and
20 methods are those that produce greeting cards, other social expression products, photographs, motion pictures, television programs, musical recordings, gift products, literary works and reference data.

BACKGROUND OF THE INVENTION

25 In a conventional retail, catalogue or library environment, customers are able to browse quickly and conveniently through large physical displays of products, in the course of which they inspect images, read words, listen to music and/or engage in other reviewing activities, until they find the specific product most suitable for their needs, interests or tastes. Under these conventional
30 circumstances, customers can and do exercise their discriminating judgments and mental processes to make selections.

Recently, machines have been introduced that replace these large physical product displays by storing data relating to the products in magnetic or optical storage devices. The customer can then
35 retrieve and review portions of the data on a video screen and audio system, by giving instructions on a keyboard or touchscreen that is connected by a programmed computer to the storage devices holding the data.

40 In simple situations involving such machines, the retrieval of the data is easily managed by conventional methods. For example, that is the case when inputting or selecting a title, an object image or a few descriptive words can communicate to a machine all of the information required to specify the data file or files that a customer wants to retrieve and display. Product characteristics are identified
45 by allowable combinations of customer entered data. The computer can be programmed to retrieve the file or files that the user specifies, either by accessing known locations in a data storage device or by searching a data base to find the files whose identities match the descriptive words input by the customer. An example of a machine and

method that accesses data from known storage locations is shown in U. S. Patent 3,757,037 to Norman Bialek. An example of a machine and method that searches a data base to find files whose identities match descriptive words is shown in U. S. Patent No. 5,056,029 to Thomas G. Cannon.

However, these machines and methods are not satisfactory in certain circumstances. This is the case, for example, where it is not desirable to restrict the identities of product data files to fixed combinations or specific sets of allowable customer entry data. Many buyers of products and users of information cannot easily give the exact word or words necessary for retrieving data either from known storage locations or by data base searching. The suitability of products, especially those that have rich aesthetic, intellectual or entertainment values, often cannot be described by single combinations of descriptive words. Thus, it may be necessary to provide the capability for several different forms or contents of customer data entry to access and retrieve a given product data file. Sometimes, a customer will be able to specify only a few criteria for products that he wants to view, while those products are identified by many descriptive words. Sometimes, a customer's specific criteria should be considered as suggestive only and a wide range of product files should be shown to him, some of which have very few, if any, of the exact criteria specified by the customer. Conversely, some data files may apply to and ought to be retrievable in response to many different sets of customer purposes, interests, needs or tastes. In addition, these files may have varying degrees of suitability for a particular set of customer criteria, rather than being designated as either suitable or not suitable. In such cases, the customer might prefer to see files of such varying suitability in the order of their anticipated suitabilities, from the highest to the lowest. Also, different customers may prefer to see different numbers of products having a range of suitabilities. Furthermore, the relative anticipated suitability of a data file for a particular intended purpose may vary with the type of customers generally using the machine, the geographic location and environment of the machine, the time of year, the wishes of the machine owner or operator and other factors. Relative suitabilities may even vary with individual customers. In addition, the relative suitability of a data file may be a property that should be fine tuned based on previous customer selections.

All of the aforementioned circumstances and needs can best be served by a system which embodies one or more kinds of expert judgment data for the purpose of selectively retrieving an optimally appropriate set of product data in response to any allowable customer data entry set.

45

SUMMARY OF THE INVENTION

The apparatus and method of this invention are designed to meet the forgoing data retrieval needs. They allow a customer to enter

data relating to his product interests that is not restricted to and need not be matched to the data sets that identify product files. Product files may be retrieved in response to a wide variety of sets of customer data entries.

5 Accordingly, an object of this invention is to provide an improved method and apparatus for storing, retrieving and delivering product data that enables data relating to general purpose and multipurpose products to be used to serve a variety of customer needs.

10 Another object is to provide an improved method and apparatus for storing, retrieving and delivering product data that allows one set of customer entered criteria to access data relating to a variety of different products of varying applicability to the criteria, from a general applicability to a more specific applicability.

15 Another object is to provide an improved method and apparatus for storing, retrieving and delivering product data that allows data relating to a product designed for a specific purpose to be retrieved in response to customer entered criteria relating to another purpose but presented in a modified form that more closely fits
20 the other purpose.

 Another object is to provide an improved method and apparatus for storing, retrieving and delivering product data that allows a product designed for a specific purpose to be retrieved in response to customer entered criteria relating to another purpose and
25 also allows the customer to modify the product to more closely fit the other purpose;

 Another object is to provide an improved method and apparatus for storing, retrieving and delivering product data that displays the data for a plurality of products based on a designated or
30 internally generated priority order that is related to customer entered criteria, with or without the superposition of a randomizing process.

 Another object is to provide an improved method and apparatus for storing, retrieving and delivering product data that displays data relating to a plurality of products, a specific
35 percentage of which are only generally related to customer entered criteria.

 Another object is to provide an improved method and apparatus for storing, retrieving and delivering product data that allows data relating to separate components of products to be retrieved
40 and assembled in various combinations for display in response to customer entered criteria.

 Another object is to provide an improved method and apparatus for storing, retrieving and delivering product data that allows the display of data relating to a plurality of products to be
45 altered to accommodate different individual users or customers, different market conditions or characteristics, different time periods and different owner/operator preferences. Specifically, the display

may be modified by changing the sequence in which the products are displayed, by changing the likelihood of certain products being displayed or not displayed and by prohibiting the display of certain products.

5 These objects of the invention are accomplished by a method and apparatus in which (a) product data relating to a plurality of products are stored in a data storage device; (b) customer data entry sets are stored in a data storage device, each customer data entry set indicating possible criteria for a product desired by a customer; (c)
10 a plurality of product lists are stored in a data storage device, each product list referencing sets of product data relating to products having common applications; (d) at least one product list is connected to a plurality of customer data entry sets; (e) a customer is requested to indicate criteria relating to a desired product; (f) the criteria
15 are received from the customer; (g) the customer data entry set or sets are selected that best correspond to the criteria received by the customer; (h) the product lists connected to the selected customer data entry set or sets are retrieved; (i) the sets of data relating to the products referenced on the retrieved product lists are retrieved and
20 displayed; (j) the customer is requested to select one of the products whose set of data is displayed; (k) the customer's product selection is received; and (l) the selected product or set of data relating to the selected product is delivered to the customer.

25 One of the options that may be included in the apparatus and method of the invention is a program that allows a customer to enter data that modifies the selected product or data set by adding, deleting or substituting words or graphical elements of the product or data set.

30 Another option that may be included in the apparatus and method of the invention is the storage of priority ratings for each product indicative of expert judgments of the application suitability of the product.

35 Still another option that may be included in the apparatus and method of the invention is a program that allows users, customers, owner/operators or others to enter data that cause the priority ratings stored for the product to be modified, thereby enabling the system to accommodate individual needs or specific market circumstances.

40 The method and apparatus of this invention therefore enables a customer to enter a combination of words expressing his product criteria and in response receive a display of a variety of products that are likely to be of interest to him whether explicitly specified or not. In addition, data relating to an individual product is capable of being retrieved in response to a variety of customer needs expressed by many different possible sets of data that might be
45 entered by a customer. That allows a relatively small library of product data files to serve a wide variety of customer needs and interests and also allows one customer's specified criteria to cause

the retrieval and display of data relating to a wide range of products that meet the criteria with varying degrees of specificity.

These and other objects, advantages and features of the invention will be more apparent from the following detailed description and attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figures 1A and 1B are block diagrams of apparatuses for storing and retrieving product data relating to social expression cards, showing several embodiments of the present invention;

Figure 2 is a block diagram of a data storage device that is part of the apparatus of Figures 1A and 1B.

Figures 3 and 4 are block diagrams showing connections between various data files stored in the data storage device of the apparatus of Figures 1A and 1B;

Figures 5, 6, 7, 8 and 9 show sample menu screens that may be presented on the video display screen of the apparatus of Figures 1A and 1B;

Figures 10A, 10B, 10C and 10D show sample product lists that may be stored in the data storage device of the apparatus of Figures 1A and 1B;

Figure 11 shows a sample suitability coding system that may be used in storing data in the data storage device of the apparatus of Figures 1A and 1B;

Figure 12 shows a sample master suitability code list that may be stored in the data storage device of the apparatus of Figures 1A and 1B;

Figure 13 shows a sample list of data to be supplied by experts for entry in the data storage device of the apparatus of Figures 1A and 1B;

Figures 14A, 14B and 15 show sample owner/operator query screens for display on the video screen of the apparatus of Figures 1A and 1B; and

Figures 16 to 37 are flow diagrams showing the operation of the apparatus of Figure 1.

DESCRIPTION OF A PREFERRED EMBODIMENT

A. The Basic Parts of the System

The apparatus 1A shown in Figure 1A is designed for the on-site storage, retrieval and delivery of social expression cards in a retail store. A single apparatus 1A performs all these functions at one location. This is the apparatus that will be shown and described in detail for the purpose of illustrating one embodiment of the present invention. It includes a programmed computer 2 and data storage device 3 connected to the computer 2. The apparatus 1A also includes input and display hardware and software 4 connected to the computer 2. The input and display hardware and software 4 are in turn connected to a video monitor 5, and audio system 6 and one or more customer data input devices 7, such as a touchscreen or keyboard. In addition, the

apparatus 1A includes a printer 8 and an optional payment device 10A connected between the computer 2 and printer 8. Acting on instructions from the customer or computer and with data received from the computer 2, the printer 8 takes paper from a paper tray 9, prints a social expression card and delivers it to the customer in a dispensing tray 10. Conventionally, all of these components of the apparatus 1A are housed in a single kiosk, located in a retail store or shopping mall concourse.

However, the present invention may also be embodied in an apparatus 1B, shown in Figure 1B. The apparatus 1B is designed for storing and retrieving data relating not only to greeting cards but to a wide variety of other products, including still pictures, motion pictures, television programs, musical recordings, gift products, literary works and compilations of reference data. Also, the apparatus 1B is not restricted to the on-site storage, retrieval and delivery of these products. Accordingly, it includes a data communications system 11 that is connected between the computer 2 and input and display hardware and software 4, so that the hardware and software 4 and connected video monitor 5, audio system 6 and data input devices 7 may be placed at a location remote from the computer 2 and a data storage device 3. In addition, another data communications system 12 connects the computer 2 to one of a variety of remote reception, display, production and product ordering devices 13. An example of one such device would be the home computer and attached printer of a customer or a recipient to whom the customer wishes to send a product or related data, with the video monitor 14 and audio system 15 being the corresponding parts of the home computer of the customer or recipient. Thus, the home computer might receive a data file of a product selected by the customer through an input device 7 located at a retail store. After selecting a product data file at the retail store, the customer could have the file sent to the home computer for storage on an associated data storage device and/or printing on an associated printer. Alternatively, the input and display hardware and software 4 and input devices 7 could also be parts of the home computer and the video monitors 5 and 14 as well as the audio systems 6 and 14 could be one and the same parts of the home computer. The customer could then send data relating to the kind of product he desires to a remote computer 2 and data storage device 3, which would in turn retrieve data files responsive to those desires and send them back to the customer's computer. The customer would then select the product he wants and, depending on the type of product, either have the product printed on his or some recipient's printer, order the product by E-mail or other transmission means, or if the product is a still or motion picture, have it displayed on his or another recipient's television screen. He could also have the product file stored on a read/write CD-ROM disc or other media for recording pictures and/or sound.

The apparatus 1A, designed for the on-site storage, retrieval and delivery of social expression cards, will now be described in detail. The video monitor 5 is preferably a CTX 5468A Super VGA color monitor with a 0.28 dot pitch. Preferably the data input device 7 is a touchscreen that covers the monitor 5. The touchscreen 7 is a transparent, pressure sensitive plate capable of sensing a location where it is touched by a customer. One touchscreen that may be utilized with the present invention is a model E-274 from Elographics Company of Oak Ridge, Tennessee.

Preferably, the printer 8 is a Hewlett-Packard 7550B (plus) plotter that is capable of detecting its paper loading status and automatically reloading paper to prepare for the next operation without receiving control instructions from the computer 13. This plotter has a one megabyte RAM upgrade with 70ns chips and a "B" size card stock loading tray. The printer 8 should also have a four layer plotter control board, an Intel based 12 kHz 8031 micro controller with a programmable EPROM, a 26 pin DC input/output, a 7400 based chip set digital logic, three toroids and two wire sets.

An optional part of the apparatus 1A is a payment device 10A that is designed to receive money from customers in payment for printed cards. The payment device 10A is connected to the computer 2, which instructs the device 10A on the amount of money to collect. The payment device 10A is also connected to the printer 8 and prevents the printer from operating until it has received the amount of money specified by the computer 2. The payment device 10A may include a coin acceptor that has a Model C-120 electronic validator with a standard (S10 compatible) body, available from Coin Controls Inc., 1859 Howard Street, Elk Grove Village, Illinois 60007. The device 10A may also include Mars VFM4 electronic bill acceptor with an upstacker body, available from Mars Electronics International, 1301 Wilson Drive, West Chester, Pennsylvania 19380. In addition, device 10A may have a vending controller board for accepting credit cards, including a thermal printer, a cutter mechanism and a magnetic stripe reader, per Standard Industries specification dated May 23, 1993, available from Standard Industries, Kontrolle Division, 14250 Gannet Street, La Mirada, California 90638.

The audio system 6 allows the computer 2 to send verbal operating instructions to the customer. The computer 2 may also be equipped to send messages through the speakers to potential customers, encouraging them to use the machine. The audio system 6 preferably includes two speakers, each with a 3 to 4 watt output and equipped with their own individual power supply and a one amp transformer.

The computer 2 displays card designs, card design components and card design criteria on the monitor 5, inviting a customer to make selections. The customer makes selections by pressing the locations of the touchscreen 7 that cover the portions of the

monitor 5 that display the desired designs, components and criteria. The touchscreen 7 then sends those selections to the computer 2.

The computer 2 preferably has mini-tower chassis with dual fans, a 486/33mhz DX Intel chip upgradable processing system, a 16 megabyte random access memory (RAM) (70ns), a sound blaster compatible sound board with midi capacity, a Sony internal CD-ROM (CDU-535-01), a Sony bus adapter OPA-461 with a custom "pre-fetch cache" that includes dealer integration of a component level circuit bypass jumper, a Sony custom pre-fetch cache driver, an ATI Mach 32 video accelerator card with a one megabyte Vram, an Elographics touchscreen board, a non bootable 1.44 megabyte Teac or Sony floppy disk drive, a 128k cache, a 200 watt power supply, three parallel printer ports and two serial printer ports. The computer 2 is preferably loaded with Microsoft DOS 5.0 software and Fastlynx 2.0 transfer software.

The data storage device 3 connected to the computer 2 may include any combination of replaceable, remote, or built-in digital or analog data storage systems. The digital data storage systems may include magnetic disks or tapes, magnetic or electromagnetic storage media, or optical storage media and these storage media may be capable of temporary and/or permanent data storage.

As shown in the schematic diagram of Figure 2, the data storage device 3 includes a high density storage unit 16, in which are stored product data files 17 and product component data files 18, together with product codes that identify the data files 17 and 18. In the preferred embodiment, the product codes consist of simple alphanumeric character strings. However, they may be titles, names or any other identifying symbols.

The storage device 16 preferably comprises optical disc devices that use CD-ROM or other high density storage means. The files 17 and 18 stored in these devices include all the information necessary to display and, preferably, print social expression products or components. The files for each product or product component may be duplicated, with one compact version designed for the display of the product on a video monitor and the other designed for printing the product. In addition, the files 17 for displaying complete products may be stored separately from the files 18 for displaying product components, and the printing files may be likewise separated. The CD-ROM optical discs may also contain assembly program files 19 for assembling various component designs to form complete products. The optical discs may further contain data modification program files 20 that enable the customer and/or the computer to modify a selected product data file 17 or component data file 18 prior to display or printing. If the storage device 16 comprises CD-ROM optical disc devices, the product data files 17 and 18 may be changed periodically simply by substituting new discs for old discs. If the CD-ROM memory is of the read-only type, no product data file and or its product code can be changed except by replacing the disc on which it is stored.

The data storage device 3 also includes another data storage unit 21. Some or all of the data files in the unit 21 may be stored on the same CD-ROM discs that contain the product data, on other CD-ROM discs, or on other types of data storage devices, preferably of the high density type. Some of the data files in the unit 21 may be stored in read/write memory (such as hard drives) to enable appropriate additions, deletions or modifications of data. This applies, for example, to product lists containing priority rating data. These various data files include customer data entry sets 22, product directories 23, product lists 24, menu screens 25, modifying, customizing, sequencing and selection algorithms 26, marketing screens and screen lists 27, sound files and sound file lists 28, a master suitability code list 29 an owner/operator profile data list 30, owner/operator query screens 31 and a translator 343. In addition, these data files include the operating program modules 32, shown in detail in the flow diagrams of Figures 16 to 34.

B. The Entry of Customer Data and

Determination of Products to be Displayed

As illustrated in Figures 3 and 4, social expression product images are retrieved in response to one or more customer data entry sets 22 that are determined by product criteria 22a chosen by the customer. In response to a set of customer entered selection criteria 22a, a product selection module 300 (Figures 16 and 28 to 33) retrieves one or more of a number of customer data entry sets 22 and the product directories 23 (Figures 2, 3 and 4) associated with those data entry sets. Examples of various customer data entry sets 22 and product directories 23 and how they might be associated are shown in Figures 3 and 4. Each product directory 23 is identified by an alphanumeric character string and is specifically designed to retrieve products meeting a certain combination of criteria, such as, for example, "Birthday," "Mother," "Cute" and "Poetry," or perhaps a more general combination such as "Birthday" and "Mother."

Each product directory 23 is in turn associated with one or more product lists 24 (Figure 2, 3 and 4). As Figures 3 and 4 show, each product list 24 is identified by an alphanumeric character string and contains the product codes for those products that meet to some minimally acceptable degree, as determined by expert judgment, the specific use descriptions of one of the product directories 23. However, in addition to its primary product directory 23, each product list may also be retrievable by other product directories such as those that have criteria combinations that are met only generally or only partially by the products on the list. Thus, the products whose codes are on a given product list correspond, at least to some degree, to the criteria represented by all of the product directories that are capable of retrieving the list and, in turn, these products also meet, at least to some degree, the criteria represented by all of the customer data entry sets that are capable of retrieving the mentioned product

directories. Individual products are, therefore, potentially retrievable in response to any of a plurality of customer data entry sets and, conversely, any of a plurality of data entry sets may lead to the retrieval of a single product.

5 The individual products eligible for retrieval in response to a given customer data entry set 22 may be changed at any time simply by modifying either the identities of the product directories 23 associated with that data entry set, the identities of the product lists 24 associated with a product directory with which the customer data entry set is associated, or the identities of the products on a product list 24 with which an associated product directory is in turn associated.

10 Once a product has been chosen for retrieval because its product code appears on a product list that is associated, through the product directories, to a customer data entry set, the product may be retrieved immediately because its identity and location are known. No database search is needed.

15 A customer selection module 320 (Figure 30) contains programming instructions for displaying various menus and sub-menu screens 25 on the monitor 5. Each menu screen 25 consists of key words or symbols indicative of various criteria or properties that the customer may wish his product to possess. The customer is asked to choose one or more of the words or symbols by pressing the area of the touchscreen 7 that overlays the desired words or symbols. After the customer makes his selection by pressing the touchscreen 7, the customer selection module 320 (Figure 30) retrieves and displays either another menu containing a different category of words or symbols or a sub-menu containing words or symbols in an allowable subcategory that forms part of the broader category of the words or symbols of the first menu.

20 Preferably, the menu screens 25 are organized to enable the customer to gain an overview of the various product categories and subdivisions of categories stored in the product data files 17 and 18 and then quickly review those category subdivisions that have the greatest potential interest. The menu screens 25 should therefore be organized to display the most general product categories first, that is, those represented by a single criterion or characteristic, and then successively more specific categories, that is, those represented by larger and larger combinations of criteria or characteristics. In addition, the customer selection module 320 allows the customer to move backwards through the menus in order to view those that have been previously displayed. This feature helps the customer in his effort to learn all the different categories and subcategories of products available for his choice and how they are organized.

25 Examples of product categories and subcategories that might be displayed on the menus are various languages in which the products are written, product price ranges and physical properties such as the

size or type of paper. A menu may also display sending occasions such as "Birthday," "Anniversary" "Graduation," "Valentine's Day," "Easter" and other holidays. Another menu may display text references to a sender-receiver relationship, such as "Father," "Mother" and "Son," and still another menu may display various text styles, such as "Humorous," "Sexual Innuendo," and "Sentimental." Another menu might display literary styles, such as "Poetry" and "Prose" and another menu, types of designs such as "Flowers," "Sailboats" and "Christmas Tree." An example of a typical series of menus is shown in Figures 5 through 8, inclusive.

As Figures 5 through 8 show, each menu also contains a message that prompts the customer to select one of the categories contained on the menu. After selecting one of these categories by touching the touchscreen 7 in the appropriate place, the customer is given two display options. One option is to view the next menu, the content of which may or may not be dependent on the category he has just chosen. The other option is to view a selection of products from the product list or lists 24 that are associated, through product directories 23, with the customer data entry set or sets 22 that correspond to the menu selection or selections that he has previously made. The customer selection module 320 (Figure 30) determines which product lists 24 are accessed in response to the customer's menu selections. After each menu selection, the customer is given the option of viewing the next menu screen, reviewing previous menu screens in order to change menu selections or viewing a selection of products on the product lists retrieved by the product list retrieval module 340. If the customer elects to view the next menu screen, the customer selection module 320 accomplishes that function. If, on the other hand, the customer elects to view a selection of products based on the menu selections he has already made, then a product list retrieval module 340 (Figures 31 and 32) and a product retrieval and presentation module 400 (Figure 32) causes selected products to be retrieved and displayed according to a procedure described below.

If the customer elects to view the next menu after all the available menus have been displayed, then the customer selection module 320 ignores that command and the product list retrieval module 340 and product retrieval and presentation module 400 take over and retrieve and display products based on the customer's previous menu selections. However, the customer selection module 320 may allow the customer, after the last menu is displayed, to scroll back through the menus and make additional selections, thereby accessing additional product directories 23 and product lists 24 and increasing the number of products eligible for display. Alternatively, the customer selection program may allow the customer to enter multiple selections from available options on the final menu of subcategories in a hierarchical sequence of menu screens.

The inventory of available products and components contained in the files 17 and 18 may be modified, expanded or condensed at any time by replacing one or more optical CD-ROM discs in the high density storage device 16. However, whenever there are any changes to this inventory or to the product codes for the products or components, one or more of the menu screens 25, the product lists 24 and the product directories 23 may also have to be changed. Likewise, any changes in any of the menu screens 25, lists 24 and directories 23 may require changes in another associated file, list, directory or customer data entry set. A module 106 for maintaining product directories and product lists (Figures 18 and 19), a module 128 for maintaining products (Figures 20 and 21) and a module 180 for maintaining customer data entry sets (Figures 24 and 25), enables a system operator to make these changes.

The menu screens 25 may be constructed to present either a series of menu screens, such as those shown in Figures 5 through 8 or a continuous scroll display of product categories and subcategories, such as shown in Figure 9. Alternatively, a combination of separate menu screens and scroll displays may be presented. In all cases, the menus and scrolls may be controlled by any of a number of available data entry devices, such as touchscreen buttons, a mouse and cursor, a keyboard or even a voice command receiver. Also, the selection of product categories and subcategories on the menu may be controlled by any of these data entry devices. Whatever type of control is used, the customer selection module 320 (Figure 30) retrieves and displays the selected menus and operates the scrolling screen displays.

The apparatus 1A may be constructed to allow its owner or operator to limit the customer's ability to view various menus and/or products. This may be accomplished by providing an additional menu or menus, retrievable by a command code entered through an appropriate data entry device. When such menus are displayed on the video monitor 5, they prompt the owner/operator to choose various alternative sequences for the menus presented to the customer. Until changed again by the owner/operator, these alternative sequences are a permanent part of the operation of the apparatus 1A.

Another way of obtaining from the customer the information necessary to determine which products to show him is to display lists of key words and prompt the customer to select from these lists the key words that best describe or relate to the kind of product he wants to purchase. Alternatively, the computer 2 may show the customer lists of catalogue titles or alphanumeric symbols, indicating various categories of products, and prompt the customer to select the titles or symbols that best describe the kind of product he wants to purchase.

Thus, the customer may enter his product criteria either by word selections from menu screens or by word or symbol selections from catalogues or lists. In cases in which the customer makes word or symbol selections that are all included among the words or symbols of

only one of the stored customer data entry sets 22, that customer data entry set is used by the product list retrieval program 340 (Figure 31) to identify the appropriate products eligible for display to the customer. When the customer's word or symbol selections are all included among the words or symbols of a plurality of customer data entry sets 22, then all of those customer data entry sets are used by the product list retrieval program 340 to identify the appropriate products eligible for display to the customer.

However, in those cases where the criterion words selected by the customer do not coincide with those of a customer data entry set 22, or the customer selects alphanumeric character strings or other symbols not used in the customer data entry sets 22, then a customer data set translator 343 (Figure 31) is used to determine which customer data entry set or sets 22 best correspond to the words and/or symbols selected by the customer. One way in which the translator 343 might operate with customer entered criterion words is to search for the customer entry data set or sets having the most number of such criterion words. Another possibility is to drop the last criterion word selected by the customer and search for a customer entry data set or sets that coincide with the remaining words. If there is no such customer entry data set, then successive criterion words would be dropped from the end of the list and the search repeated until such a customer entry data set is found. For cases in which the customer enters an alphanumeric character string or other symbol, the translator 343 would list all the possible character strings and/or symbols that a customer can select and identify each of them with the customer data entry set or sets that best correspond to the product category signified by the character string or symbol.

C. The Development and Storage of the Product Lists

Each product list 24 includes the alphanumeric indicia that identify those product files 17 and product component files 18 that meet, within some degree of minimum suitability as determined by an expert's judgment, the product criteria represented by certain customer data entry sets 22. Thus, each product list 24 is a data file of alphanumeric product indicia and each list 24 is itself identified by its own unique alphanumeric character string.

One important feature of the product lists 24 is that the product code for each product file 17 and each product component file 18 may appear on many different product lists 24. Another important feature is that each product list 24 contains the product codes of a variety of products that correspond to, with different degrees of applicability or specificity, the criteria represented by the customer data entry sets that are associated with the list. Of course, it is desirable that the products identified on each list be displayed in an order that is related to the degree to which they correspond to the customer criteria, and perhaps some of the least well suited products should not be displayed at all. To serve those purposes, the product

lists 24 also contain, in addition to the product indicia, one or more suitability indicators that indicate how well each product on the list suits the customer criteria associated with the product list.

There are several types of suitability indicators that can be used to distinguish the products identified on the lists 24. One indicator might relate to the number of criteria that a product satisfies, or in other words, the degree to which the use descriptions of the product meet the specific criteria for which the product list is designed. This indicator can thus be called a use description coverage indicator. Another might relate to whether the product can be modified to meet more of the criteria and if so, the way in which it can be modified and whether the customer would modify it or the computer would modify it automatically. Another indicator might relate to whether the product is a complete product from the product file 17 or a product formed by assembling components from the file 18. In the case of an assembled product, there would also be stored with the product codes of the components to be assembled an indicia referencing the assembly program required for combining the components. Examples of product lists using the degree of specificity indicators, modification indicators and component assembly indicators are shown respectively in Figures 10A, 10B and 10C.

An example of a more sophisticated product list 24 is shown in Figure 10D. In addition to identifying the product directories 23 associated with the list (block 24a), the product codes for each product and product component on the list (column 24b) and the product use descriptions (column 24d), all of which are contained in the lists of Figures 10A, 10B and 10C, the product list of Figure 10D identifies all the other product lists on which each product or product component appears (column 24c), indicators of the degree of specificity or use description coverage for each product (column 24f) (also shown on the list of Figure 10A), indicators that tell the computer to make certain modifications to the product data to make the design suitable for display, such as "CDT" (Computer Delete Text), "CDP" (Computer Delete Poetry) and "FIB" (leave a blank space for customer fillin) (column 24e) and base priority ratings (column 24g) and modified priority ratings (column 24h) that relate to expert judgments of the suitability, appeal and/or freshness of each product on the list, as it relates to the customer criteria for which the list was designed. If a product list 24 is associated with two or more directories, as in the case of Product List 0013 of Figure 10D, then it may be desirable to assign a different product rating to each product, dependent on the directory through which the product list is retrieved. These individual priority ratings for each of the directories A, B and C, identified at the top of the list, are shown in the base and modified priority rating columns 24g and 24h. Likewise, the use description coverages (column 24f) for each product will vary according to the directory through which the list is retrieved.

D. Customizing the Selection of Products

An optional feature that may be incorporated in the apparatus 1A is the changing of the priority ratings, shown in the far right-hand column of Figure 10D, to reflect the needs and interests of particular customer groups, particular owner/operators and particular times, locations and other circumstances surrounding the sale of the products. The need for this customizing capability arises from the fact that it may be impossible to design a single, fixed system that adequately or optimally serves the needs of all kinds of customers and owner/operators in all kinds of locations and under many circumstances.

For customizing purposes, the priority ratings are changed by the use of suitability codes assigned to each product on each product list 24. Each suitability code is preferably an alphanumeric combination that has two letters, indicating a specific customer group, location, time period, owner/operator preference or other circumstance, and a number that indicates whether a product is highly suitable, moderately suitable, neutral, highly unsuitable or precluded for use in that circumstance. All the possible suitability codes that might be used on all the products stored in the apparatus 1A are called a "suitability code data set." An example of such a suitability code data set is shown in Figure 11.

Figure 12 shows an example of a master suitability code list 29, which lists the product codes of all the products and product components stored in files 17 and 18, the product lists 24 on which the product or product component appears, and the suitability codes assigned to each product and product component on each product list. The master suitability code list 29 is stored in the data storage device 3 (Figure 2) and may be constructed using two sets of data. One data set is created by creative or market experts who understand the products and their relative suitabilities in various market circumstances. The other set is stored in the apparatus 1A at each market location by the local owner or operator, who understands local circumstances and their effect on the product preferences of local customers.

The first data set would normally be produced by creative or market experts at the time the products are created and first stored on the optical CD-ROM discs. This data set includes the suitability codes relating, for example, to the way the desirabilities of products are affected by such circumstances as location, special clientele, the time of day that the products are usually purchased, the current time of year and the length of time the product has been on the market. Such suitability codes are determined primarily by making judgments that if condition "AC" exists, then product "abc" has a relative suitability of 3 on a scale of 0 to 10. An example of such a data set is found in the top half of the sample query form of Figure 13, on which the suitability codes in the far right-hand column are entered by creative or market experts. This suitability code data is then

entered on the master suitability code list 29 stored in the data storage device 3.

The first data set also includes data formed by expert judgments relating to whether the product has certain characteristics that may affect the preferences of local owners or operators of the apparatus. An example of such data is found in the bottom half of the sample query form of Figure 13, on which the product characteristic codes in the far right-hand column are entered by creative or market experts.

Both kinds of expert data in the first set are entered on those occasions when new product files 24 are being stored in the apparatus 1A or when they are being periodically revised.

The second data set is entered by the owners or operators of each apparatus 1A who have knowledge of local circumstances and understand their own preferences regarding the kinds of themes, styles and other properties that products produced by their apparatus should possess or not possess. The owners or operators enter the data for this set by responding to one or more query screens 31 that are stored in the data storage device 3 (Figure 2) and are displayed on the monitor 5 in response to a special code entered on the computer 2 by an owner or operator. Each query screen 31 displays certain product characteristics and asks the owner or operator to select for each characteristic either a degree of suitability or preference for the characteristic or the proportion of products having that characteristic that he desires to have displayed to his customers. An example of such query screens are the screens shown in Figures 14A and 14B. The product characteristics on the query screen of Figure 14A should correspond to the product characteristics entered for various products by creative or marketing experts, such as those shown on the bottom half of the sample query form of Figure 13. For each product characteristic for which the owner or operator selects a degree of suitability or preference in response to the query screen of Figure 14A, a suitability code is generated that is applied to all products that were determined by a creative or marketing expert to have that characteristic. For each product characteristic on the query screen of Figure 14B, for which the owner or operator selects a desired proportion for products having that characteristic, that proportion is stored in the owner/operator proportions memory unit 358 (Figure 32), to be used in controlling the number of products with that characteristic that are displayed to the customer. On the query screen of Figure 14B, the owner/operator may also limit the total number of products to be displayed to the customer and that number is stored in memory unit 365 (Figure 32).

Another query screen shown in Figures 15 is designed to elicit from each owner or operator special circumstances relating to his location and type of clientele. All products judged on the query form of Figure 13 to be suited for the same locations and/or clientele

as those input by the owner or operator in response to the query screen of Figure 15 are assigned the appropriate suitability code on the master suitability code list 29.

5 All of the other suitability codes that are assigned to various products by use of query forms and screens such as shown in Figures 13, 14 and 15 are transferred to the master suitability code list 29 stored in the data storage device 3. The stored suitability codes are then used to modify the priority ratings of the products, in a process controlled by the recalculate ratings module 214 (Figure 37),
 10 shown in detail in Figure 27. As an alternative to the master suitability code list, the suitability codes may be stored directly with each product listed on each of the product lists 24. However, a master suitability code list may be the most efficient way of storing these codes, because many products are stored on a plurality of product
 15 lists 24, whereas each product is listed only once on the master suitability code list 29.

The following is an example of a customizing algorithm that may be employed in step 224 of the recalculate ratings module 214 (Figure 27) to modify the base priority ratings of the products listed
 20 on the product lists 24:

Step 1. Translate each suitability code on the master suitability code list 38 into a priority rating multiplier, according to the following table:

25	Last Number of	Priority Rating
	<u>Suitability Code</u>	<u>Multiplier</u>
	1	1.2
	2	1.1
	3	1.0
	4	0.9
30	5	0.8
	6	0.7
	7	0.6

Step 2. For each product on the master suitability code list 38 that has one or more suitability codes relating to location, clientele or other local
 35 circumstance, convert all such suitability codes to priority rating multipliers, using the table of step 1. For those products that have more than one such suitability code and thus more than one priority rating multiplier, form a combined location/clientele/ circumstance multiplier by taking the product of all the individual priority rating
 40 multipliers.

Step 3. For each product that has one or more suitability codes relating to a time of day, month, season
 45 or year, compare the time on the internal clock of the computer 13 to determine whether one or more appropriate times applies. Using the table of step 1, convert all

suitability codes for such appropriate times to individual priority rating multipliers and take the product of those multipliers to determine a combined time multiplier.

5 Step 4. For each product that has one or more suitability codes relating to owner/operator preference characteristics, using the table of step 1, convert all such suitability codes to individual priority rating multipliers and take the product of those multipliers to determine a combined preference multiplier.

10 Step 5. Form a single multiplier by taking the product of all the multipliers calculated in steps 2 through 4. Multiply that single multiplier by each base priority rating on each product list 24 containing the product to determine a modified priority rating.

15 The above algorithm is, of course, an example of only one of many possible algorithms that can be used to convert the suitability codes of each product to modified priority ratings on the product lists 24.

20 The end product of this customizing process is a set of modified priority ratings associated with the various product items contained on the various product lists. These modified priority ratings will influence computer decisions concerning the eligibility and sequencing of products for display in accordance with methods and means described below.

25 E. The Selection, Retrieval and Display of Products

 A product list retrieval module 340 (Figures 31 and 32) and a product retrieval and presentation module 400 (Figure 34), cause the selection, retrieval and display of certain products, all from the product lists 24, that were identified as a result of the customer's previously entered menu choices.

30 The product list retrieval module 340 establishes the order of retrieval and display of the products on the called-up product lists 24. The module 340 begins to operate when a customer makes a menu choice that causes the computer 2 to access one or more identified product lists 24. When more than one product list 24 is identified in response to the identification of one or more product directories 23, resulting from the customer's menu choices, then all products on those product lists are combined for the purpose of establishing their order of retrieval and display. Duplicate products are removed in step 350 the module 340 (Figure 31), with each duplicate having the lower priority rating being chosen for removal.

40 The steps 351 to 354 of product list retrieval module 340 determine the order in which the products on the retrieved lists will be presented to the customer. The questions in steps 351 and 352 may be answered by expert judgments by people such as the system operator, the local owner/operator and the customer, in order to determine the

45

sequence of product presentation. The following are examples of various possible sequences:

Example 1. Products are sequenced in the order in which they are listed in the product lists 24 without regard to their priority ratings (by answering "no" in both steps 351 and 352).

Example 2. Products are sequenced in the order of their modified priority ratings, as assigned and modified as set forth in Section D above (by answering "no" in step 351 and "yes" in step 352). All priority ratings must be positive numbers. When more than one modified priority rating is stored with a product code on a list 24, then the modified priority rating associated with the directory through which the list was retrieved is the one used (see Figure 10D). Products having exactly the same modified priority ratings are sequenced in a random order with respect to one another.

Example 3. All products are sequenced in a random order (by answering "yes" in step 351).

Example 4. Products are sequenced by a priority-weighted random process. For the first and each successive position in the random selection order, each product receives a probability of being selected that is weighted in proportion to its modified priority rating. (This sequencing process is not included in the product list retrieval module 340 shown in Figure 31).

Example 5. Products are sequenced in the order of their modified priority ratings, but those ratings are further modified following each customer use that caused the computer to call up the product list in which the product appears. For example, each time a product list is called up, the base priority ratings of the product on the list selected by the customer is increased by 5 percent and the base priority ratings of all the products on the list displayed to the customer but not chosen are decreased by 5 percent. (See steps 418 and 419 of Figure 34).

The product list retrieval module 340 (Figure 31) has a module 356, set forth in detail in Figures 32 and 33, that applies owner/operator proportions to the list of products to be displayed to the customer. These owner/operator proportions are generated by answers that the owner/operator makes to questions such as those shown in the query screen of Figure 14B. The product list retrieval module 340 thus limits the total number of products having certain characteristics to the proportions selected by the owner/operator.

As an optional feature, the product list retrieval module 340 may be constructed to display fewer products during busy times of the day or year in order to reduce the waiting time for other customers

waiting to use the apparatus. This may be done by changing the maximum product number in memory unit 365 (Figure 32) in response to an answer to an owner/operator query, shown at the bottom of the query screen of Figure 14B.

5 The product retrieval and presentation module 400 (Figure 34) includes an optional feature that limits the initial display of products to the first "x" number of products on the list (step 404). After the customer has viewed this group of products, he presses a "next" button (step 405) in order to see the next group of "x" number
10 of products. The module 400 also allows the customer to view two or more products at the same time (steps 401 and 402). One or more of the products may be simultaneously displayed and held on the screen as a miniature which the customer can enlarge to fill the screen by touching the portion of the touchscreen 12 over the miniature. Thus, the
15 customer may readily recall products displayed earlier. The presentation module 400 also allows the customer to scroll forward or backward through the groups of products (step 406). In alternative embodiment not illustrated, the module 400 may hold up the display of products meeting criteria other than those designated on a special
20 product list, until all other products have been displayed.

 The presentation module 400 locates, retrieves and displays product and product component data that is stored in the files 17 and 18, preferably located on optical CD-ROM discs. Because the selected products are identified in both the product files 24 and their storage
25 files 17 and 18 by matching alphanumeric indicia, these products may be retrieved directly without recourse to database search methods. The product and product component display data received from the files 16 and 17 may be held in temporary storage in the data storage device 3 while awaiting display.

30 Retrieved product components are assembled by component assembly programs 19 (Figure 2). Such assembly programs are identified on the product lists 24 that list component combinations (see Figure 10D).

35 While the customer is reviewing the display of products selected by the computer 2 in response to his menu choices and other data input selections, he is given the option of selecting any one of these products for the purpose of personalization and purchase (step 415, Figure 34).

40 After selecting the product he wants to purchase, the customer may use a data entry device 7 (Figure 1A) to customize and personalize the product. On some products, blank spaces are designated in which the customer may fill in his own words. On other products, the customer may delete portions of the text or the graphic design, leaving either blank spaces or replaced with customer entered indicia.
45 Some products will be automatically modified or have material deleted pursuant to instructions stored on the product list, such as those contained in column 24e of the product list 0013 of Figure 10D. On all

products, the customer may enter textual or graphic indicia in available or designated blank spaces. By storing product designs that can be modified in these various ways, the apparatus 1A allows a customer to select a product that does not meet all of his criteria and then overcome that deficiency by modifying the product. For instance, a customer looking for a birthday card for his mother-in-law or sister may decide that the most suitable card is one that meets all of his criteria, except that it says, "Happy Birthday, Mother." If the card allows the customer to substitute "Mother-in-Law" or "Sister" for "Mother," then he can select such a card and then modify it to suit his specific needs.

In the present embodiment showing an on site card vending apparatus 1A, when the customer has completed his modification of his chosen product and has indicated that the final product is satisfactory, the computer downloads all the product data for transmission to the printer 8 (Figure 1A). The customer is then instructed to pay for his product by means of the payment device 10A. After the payment device 10A receives payment, the device or the customer gives the signal to the printer 8, the printer takes a sheet of paper from the tray 9, prints the card according to instructions provided by the downloaded data, and deposits the card in the dispensing tray 10.

F. Overview of the System Operation

The operation of the apparatus 1A and the programming of the computer 2 is shown in the flow diagrams of Figures 16 to 37. Figure 16 shows the major parts of the system and how they are related to one another. The list builder module 100 and the local owner/operator customizer module 200 are shown as independent units, because they are not part of the operation of the system when it is being used by a customer. Rather, these blocks represent steps that maintain and update the files stored in the system, which are performed at various intervals when the system is not in use by customers.

The list builder module 100 (Figure 16) includes the steps that enable the operators of the system to add, delete and change the connections between various system components, including the product lists 24, the product directories 23, the customer data entry sets 22, and to change the suitability codes on the master suitability code list 29 (Figure 12). The details of the list builder module 100 are shown in Figures 17 through 25. As Figure 17 shows, the module 100 has four main parts, one part for creating new product directories 23, product lists 24 and connections between the directories 23 and lists 24 (module 106, shown in detail in steps 107 through 127 of Figures 18 and 19), another part for adding and deleting the product codes (and associated data) of various products to and from the product lists (module 128, shown in detail in steps 129 through 153 of Figures 20 and 21), another part for changing the suitability codes stored on the master suitability code list 29 (module 154, shown in detail in steps

155 through 179 of Figures 22 and 23) and another part creating new customer data entry sets 22 and connections between the customer data entry sets 22 and product directories 23.

The local owner/operator customizer module 200 (Figure 16) is shown in detail in Figure 26. Steps 201 to 215a of Figure 26 show how the computer 2 is programmed to allow the local owner/operator to enter his preferences for the types of products that will be displayed to customers (for example, the query screen of Figure 14A) and to indicate the type of location of his machine and the types of customers he serves (for example, the query screen of Figure 15). These preferences and types of location and customers are then used to change the suitability codes of the products and to recalculate their modified priority ratings (step 214), as shown in detail in Figure 27.

In the recalculation of the modified priority ratings, shown in Figure 27, the module 214 takes the first base priority rating of the product on the first product list on which the product appears (step 220) and sets the modified rating equal to that base priority rating (step 221). Then, the first suitability code for that product on its first product list is obtained from the master suitability code list 29 (step 222). If the suitability code is a time sensitive code that is not applicable, it is removed from the calculation (step 225). Otherwise, step 226 converts the code to a rating operator, shown in Figure 27 as a multiplier, by means of an algorithm such as described in Steps 1 through 5 above. That operator or multiplier is then applied to the modified priority rating (step 227), which in the case of the product's first suitability code is equal to the base priority rating (step 221). That process is repeated for each subsequent suitability code (step 229) until step 228 shows that there are no more suitability codes for that product on its first product list. The last modified rating calculated in step 227 is then stored on the product list as the modified priority rating for that product and associated directory (step 230). Then, if there are base priority ratings for the product associated with other product directories, for instance, the base priority ratings listed in column 24g in Figure 10D (step 229) or if there are base priority ratings for the product associated with other product lists (see Figure 12), the process is repeated to determine the corresponding modified priority ratings. That process is begun by obtaining the next base priority rating (step 232) and setting the modified priority rating equal to that base priority rating (step 221). When all the modified priority ratings for the product have been recalculated, the module 214 obtains the first base priority rating for next product (step 220) and recalculates all the modified priority ratings for that product and then for all the other products on the master suitability code list 24.

The product selection module 300 (Figure 16) is divided into three main parts, shown in Figure 28, namely a marketing loop 301, a customer selection module 320 and a product list retrieval module

340. The marketing loop 301, which includes steps 302 to 312 (Figure 24), shows how the computer 2 is programmed to display the pictures and sound the audio for attracting customers to the kiosk 10 and showing them the kinds of products that they can purchase. The customer selection module 320 (Figure 30) includes steps 321 to 331 that display the criteria menu screens 25, such as those shown in Figures 5 through 8, and receive the criteria chosen by the customer for the products to be displayed to him.

The product list retrieval module 340 (Figures 31, 32 and 33) includes steps 341 to 376. Steps 341 to 343a identify one or more customer data entry sets 22 that best correspond to the customer selected criteria 22a, using a customer data set translator 343 when such selected criteria do not coincide with a customer data entry set. By means of product directories 23 connected to the stored customer data entry sets (step 344) and product lists 24 connected to the directories (step 346), the module retrieves the product codes and priority ratings of the products eligible for display to the customer (step 348). Steps 351 to 354 determine the order in which the products are to be displayed, using a random order, the order of the priority ratings of the products, a combination of both or by employing some other algorithm. Module 356, including steps 357 to 376 (Figures 32 and 33), delete from the display those products falling outside the bounds set by the owner/operator preferences stored in the memory units 360 and 362 and obtained from the answers entered on the query screen of Figure 14B.

The product retrieval and presentation module 400 includes steps 401 to 419 (Figure 32) that retrieve the complete products and product components from the files 17 and 18, assemble the components and display the products or assembled components according to a screen format selected by the customer. The questions of steps 401, 405, 406, 411, 412, 413, 415 and 416 preferably appear as buttons in the margins of the screen displays that show the products to the customer. The customer can touch the touchscreen 7 over the button 401 to view the groups of products presented simultaneously on the same screen. Otherwise, the products are presented one by one. If the customer sees a product that he thinks he may want to select, he can touch the save product button 413, which causes the product to be marked as saved for possible later recall when the customer touches the button 416. When the customer finally chooses his desired product by touching the select and customize button 415, the computer 2 executes the product counting and priority rating modifying steps 418 and 419 and then advances to the product customization module 500 (Figure 35). Step 419 causes the base priority rating of the selected product to be increased, such as by multiplying the rating by a factor of 1.01. Step 419 also causes the base priority ratings of all the products that were displayed but not selected to be decreased, such as by multiplying each rating by a factor of 0.99. Various other algorithms that incorporate cumulative

or incremental customer selection and non-selection information may be applied to base priority ratings for the purpose of adjusting the ratings upward or downward to reflect actual customer preferences.

5 The product customization module 500 includes steps 501 to 516 (Figure 35) that enable the customer to add and delete various portions of the product, including text or graphics or both.

The product delivery module 600 includes steps 601 to 607 (Figure 36) that cause the data for the customer's customized product to be delivered to the printer 8 (step 606).

10 The product re-prioritizing module 700 includes steps 701 to 708 (Figure 37) that change the modified priority ratings of the products. Steps 701 and 702 of the module 700 run at fixed time intervals, for instance every 10 minutes, checking to determine the passage of a critical date or time relating to time sensitive
15 suitability codes such as those listed under General Factor (C) of the suitability coding system of Figure 11. Whenever step 702 determines the beginning or end of any of these time periods, the module 700 operates to change all the modified priority ratings affected by the time period change. If only a time period threshold has passed but the
20 date has not changed, then there is preferably a step 704 that allows only the product codes associated with time of day sensitive suitability codes to be retrieved. The changes to the modified priority ratings are made by the previously described process shown in detail in steps 216 to 232 of the recalculate ratings module 214 of
25 Figure 27.

While one embodiment of the present invention has been shown and described, other embodiments will be apparent to those skilled in the art while remaining within the scope of the appended claims.

CLAIMS

1. A method of storing and selectively retrieving and delivering product data, comprising the steps of:

- 5 (a) storing product data relating to a plurality of products in a data storage device;
- (b) storing a plurality of customer data entry sets in a data storage device, each customer data entry set indicating an allowable combination of criteria for a product desired by a customer;
- 10 (c) storing a plurality of product lists in a data storage device and referencing on each product list the product data stored in step (a) above that relates to products having one or more common applications;
- (d) connecting the product lists to the customer data entry sets, at least one product list being connected to a plurality
- 15 of customer data entry sets and corresponding to the customer data entry sets with different degrees of specificity or applicability;
- (e) requesting a customer to indicate criteria relating to a desired product;
- (f) receiving the criteria indicated by the customer;
- 20 (g) selecting the customer data entry set or sets that best correspond to the criteria received in step (f);
- (h) retrieving from the data storage device the product lists connected to the customer data entry set or sets selected in step (g);
- 25 (i) retrieving and displaying data relating to the groups of products referenced on the product lists retrieved in step (h);
- (j) requesting the customer to select one of the products whose data is displayed in step (i);
- (k) receiving the customer's selection of a product; and
- 30 (l) delivering the product or data relating to the product selected in step (k).

2. The method according to claim 1 wherein the step (d) of connecting the product lists to the customer data entry sets

35 includes the steps of connecting the product lists to product directories and of connecting the product directories to the customer data entry sets, at least one product directory being connected to a plurality of customer data entry sets and to a plurality of product lists, the product directory corresponding to the customer data entry sets with different degrees of specificity.

40

3. The method according to claim 2 wherein the step (d) of connecting the product lists to the customer data entry sets includes the step of connecting at least one customer data entry set

45 to a plurality of product directories.

4. The method according to claim 2 wherein the step (d) of connecting the product lists to the customer data entry sets includes the step of connecting at least one product list to a plurality of product directories, the product lists corresponding to the product directories with different degrees of specificity.

5. The method according to claim 1 wherein:
the step (e) of requesting a customer to indicate criteria relating to his desired product includes the step of presenting to the customer a plurality of menu screens, each displaying criterion choices from which the customer is requested to select one criterion; and
the step (f) of receiving the criteria indicated by the customer includes the step of receiving the criterion choices indicated by the customer on the menu screen or screens presented to him.

6. The method according to claim 5 wherein the identity of one or more of the menu screens presented in step (e) depends on the identity of one or more of the criteria selected by the customer from the menu screens previously presented.

7. The method according to claim 5 wherein one or more of the menu screens presented in step (e) comprises a continuous scroll of criterion choices that are displayed sequentially.

8. The method according to claim 1 wherein:
the step (e) of requesting the customer to indicate criteria relating to a desired product includes the step of presenting to the customer a list of key words, character strings or symbols from which the customer is asked to pick the key words, character strings or symbols that indicate the criteria that the customer has for a product to be selected by him;

the step (f) of receiving the criteria indicated by the customer includes the step of receiving the customer's selection of key words, character strings or symbols; and

the step (g) of selecting the customer data entry set or sets that best correspond to the criteria received in step (f) includes the step of translating the key words, character strings or symbols selected by the customer into one or more customer data entry sets.

9. The method according to claim 8 wherein the step (g) of selecting the customer data entry set or sets that best correspond to the criteria received in step (f) includes the steps of:

(g) (1) storing key words, character strings or symbols or combinations thereof that can be selected by a customer,

(g) (2) storing with each key word, character string or symbol or combination thereof the identity of a customer data entry set

or sets that best correspond to the key word, character string or symbols or combination thereof and,

5 (g) (3) in response to the reception of a particular key word, character string or symbol or combination thereof selected by a customer, identifying the customer data entry set or sets that are stored with that particular key word, character string or symbol or combination thereof.

10 10. The method according to claim 5 wherein the step (g) of selecting the customer data entry set or sets that best correspond to the criteria received in step (f) includes the steps of:

(g) (1) storing combinations of criteria choices that can be selected by a customer,

15 (g) (2) storing with each combination of criteria choices the identity of the customer data entry set or sets that correspond to that combination and,

(g) (3) in response to the reception of a particular combination of criteria choices, identifying the customer data entry set or sets that are stored with that particular combination of criteria choices.

11. The method according to claim 1 further comprising the steps of:

25 (c) (1) storing on each product list an instruction for modifying the product data of a product in the event that product is selected from that product list for display to a customer; and

(i) (1) prior to the display of the product data of a product having an instruction for modification stored on a retrieved product list, modifying the product data in accordance with that instruction.

12. The method according to claim 1 further comprising the steps of:

35 (k) (1) requesting the customer to input changes to the selected product; and

(k) (2) receiving the changes input by the customer and making those changes to the selected product.

13. The method according to claim 1 wherein the step (c) of storing product lists in a data storage device and referencing the product data includes the step of:

40 (c) (1) identifying with a priority rating each product whose product data is referenced on a product list, said priority rating indicative of an expert judgment of the suitability of the product for the common applications of all the products whose product data is referenced on the product list;

and the step (i) of retrieving and displaying data includes the step of:

(i)(1) displaying the data relating to each product in an order dependent on the priority ratings stored in step (c) (1).

5 14. The method according to claim 13 wherein the priority ratings by which products are identified in step (c)(1) are changed periodically to reflect different market conditions, owner/operator preferences or customer selection or non-selection of products.
10 retrieved and displayed in step (i).

15 15. The method according to claim 13 including the additional steps of:

(c) (2) identifying each product whose product data is
15 referenced on a product list with one or more suitability codes each indicative of the desirability of retrieving and displaying data relating to the product in a particular circumstance;

(c) (3) converting by an algorithm the suitability
20 codes of step (c) (2) to a priority rating operator for each product;
and

(c) (4) applying the priority rating operator of step
(c) (3) to the priority rating of each product to obtain a modified
priority rating;

25 wherein the priority ratings used in step (i) (1) to
determine the order of product display are the modified priority
ratings calculated in step (c) (4).

16. The method according to claim 13 including the additional step of:

30 (k) (1) increasing the priority rating of a product
each time a customer's selection of the product is received and
decreasing the priority rating of a product each time the product is
retrieved and displayed but not selected.

35 17. The method according to claim 15 including the additional step of:

(k) (1) increasing the priority rating of a product
each time a customer's selection of the product is received and
decreasing the priority rating of a product each time the product is
40 retrieved and displayed but not selected.

18. The method according to claim 15 including the step
of storing the suitability codes by which products are identified in
step (c) (2) on a master suitability code list.

19. The method according to claim 18 including the steps of:

(c) (2) (i) storing on the master suitability code list the identities of the product lists on which the product data relating to each product is referenced.

20. The method according to claim 19 wherein the suitability codes of step (c) (2) contain variable indicia and the method includes the steps of:

(c) (2) (iii) requesting an operator to indicate preferences for the types of products to be displayed;

(c) (2) (iv) receiving the preferences indicated in step (c) (2) (iii); and

(c) (2) (v) changing the variable indicia of the suitability codes in response to the preferences received in step (c) (2) (iv).

21. The method according to claim 19 wherein the suitability codes of step (c) (2) contain variable indicia and the method includes the steps of storing a clock in the data storage device and changing at least some of the suitability codes in response to a time or date registered by the clock.

22. The method according to claim 21 including the steps of:

(c) (2) (iii) requesting an operator to indicate preferences for the types of products to be displayed;

(c) (2) (iv) receiving the preferences indicated in step (i) (2); and

(c) (2) (v) changing the variable indicia of one or more suitability codes in response to the preferences received in step (c) (2) (iv) and changing the variable indicia of one or more suitability codes in response to time or dates registered by the clock.

23. The method according to claim 1 including the steps of:

(i) (1) requesting an operator to indicate preferences for the proportions of products to be displayed which correspond to the customer data entry set or sets with different degrees of specificity;

(i) (2) receiving the preferences indicated in step (i) (1); and

(i) (3) limiting the proportions of products presented to the customer according to the preferences received in step (i) (2).

24. The method according to claim 1 including the steps of:

(i) (1) requesting an operator to indicate preferences for the proportions of products displayed to the customer having certain characteristics;

(i) (2) receiving the preferences indicated in step (i) (1); and

(i) (3) limiting the proportions of products presented to the customer according to the preferences received in step (i) (2).

25. The method according to claim 24 wherein the characteristics of the products relate to the capability of the products for modification.

26. The method according to claim 2 wherein:
the step (e) of requesting a customer to indicate criteria relating to his desired product includes the step of presenting to the customer a plurality of menu screens, each displaying criterion choices from which the customer is requested to select one criterion; and

the step (f) of receiving the criteria indicated by the customer includes the step of receiving the criterion choices indicated by the customer on the menu screen or screens presented to him.

27. The method according to claim 26 wherein the identity of one or more of the menu screens presented in step (e) depends on the identity of one or more of the criteria selected by the customer from the menu screens previously presented.

28. The method according to claim 26 wherein one or more of the menu screens presented in step (e) comprises a continuous scroll of criterion choices that are displayed sequentially.

29. The method according to claim 2 wherein:
the step (e) of requesting the customer to indicate criteria relating to a desired product includes the step of presenting to the customer a list of key words, character strings or symbols from which the customer is asked to pick the key words, character strings or symbols that indicate the criteria that the customer has for a product to be selected by him;

the step (f) of receiving the criteria indicated by the customer includes the step of receiving the customer's selection of key words, character strings or symbols; and

the step (g) of selecting the customer data entry set or sets that best correspond to the criteria received in step (f) includes the step of translating the key words, character strings or symbols selected by the customer into one or more customer data entry sets.

30. The method according to claim 29 wherein the step (g) of selecting the customer data entry set or sets that best correspond to the criteria received in step (f) includes the steps of:

5 (g) (1) storing key words, character strings or symbols or combinations thereof that can be selected by a customer,

(g) (2) storing with each key word, character string or symbol or combination thereof the identity of a customer data entry set or sets that best correspond to the key word, character string or symbols or combination thereof and,

10 (g) (3) in response to the reception of a particular key word, character string or symbol or combination thereof selected by a customer, identifying the customer data entry set or sets that are stored with that particular key word, character string or symbol or combination thereof.

15

31. The method according to claim 26 wherein the step (g) of selecting the customer data entry set or sets that best correspond to the criteria received in step (f) includes the steps of:

20 (g) (1) storing combinations of criteria choices that can be selected by a customer,

(g) (2) storing with each combination of criteria choices the identity of the customer data entry set or sets that correspond to that combination and,

25 (g) (3) in response to the reception of a particular combination of criteria choices, identifying the customer data entry set or sets that are stored with that particular combination of criteria choices.

32. The method according to claim 2 further comprising the steps of:

30 (c) (1) storing on each product list an instruction for modifying the product data of a product in the event that product is selected from that product list for display to a customer; and

35 (i) (1) prior to the display of the product data of a product having an instruction for modification stored on a retrieved product list, modifying the product data in accordance with that instruction.

40 33. The method according to claim 2 further comprising the steps of:

(k) (1) requesting the customer to input changes to the selected product; and

(k) (2) receiving the changes input by the customer and making those changes to the selected product.

45

34. The method according to claim 2 wherein the step (c) of storing product lists in a data storage device and referencing the product data includes the step of:

5 (c) (1) identifying with a priority rating each product whose product data is referenced on a product list, said priority rating indicative of an expert judgment of the suitability of the product for the common applications of all the products whose product data is referenced on the product list;

10 and the step (i) of retrieving and displaying data includes the step of:

(i) (1) displaying the data relating to each product in an order dependent on the priority ratings stored in step (c) (1).

35. The method according to claim 34 wherein the priority ratings by which products are identified in step (c) (1) are changed periodically to reflect different market conditions, owner/operator preferences or customer selection or non-selection of products retrieved and displayed in step (i).

20 36. The method according to claim 34 including the additional steps of:

(c) (2) identifying each product whose product data is referenced on a product list with one or more suitability codes each indicative of the desirability of retrieving and displaying data relating to the product in a particular circumstance;

25 (c) (3) converting by an algorithm the suitability codes of step (c) (2) to a priority rating operator for each product; and

30 (c) (4) applying the priority rating operator of step (c) (3) to the priority rating of each product to obtain a modified priority rating;

wherein the priority ratings used in step (i) (1) to determine the order of product display are the modified priority ratings calculated in step (c) (4).

35

37. The method according to claim 34 including the additional step of:

40 (k) (1) increasing the priority rating of a product each time a customer's selection of the product is received and decreasing the priority rating of a product each time the product is retrieved and displayed but not selected.

38. The method according to claim 36 including the additional step of:

45 (k) (1) increasing the priority rating of a product each time a customer's selection of the product is received and

decreasing the priority rating of a product each time the product is retrieved and displayed but not selected.

39. The method according to claim 36 including the step
5 of storing the suitability codes by which products are identified in step (c) (2) on a master suitability code list.

40. The method according to claim 39 including the steps
of:

10 (c) (2) (i) storing on the master suitability code list the identities of the product lists on which the product data relating to each product is referenced.

41. The method according to claim 40 wherein the
15 suitability codes of step (c) (2) contain variable indicia and the method includes the steps of:

(c) (2) (iii) requesting an operator to indicate preferences for the types of products to be displayed;

20 (c) (2) (iv) receiving the preferences indicated in step (c) (2) (iii); and

(c) (2) (v) changing the variable indicia of the suitability codes in response to the preferences received in step (c) (2) (iv).

25 42. The method according to claim 40 wherein the suitability codes of step (c) (2) contain variable indicia and the method includes the steps of storing a clock in the data storage device and changing at least some of the suitability codes in response to a time or date registered by the clock.

30 43. The method according to claim 42 including the steps of:

(c) (2) (iii) requesting an operator to indicate preferences for the types of products to be displayed;

35 (c) (2) (iv) receiving the preferences indicated in step (c) (2) (iii); and

(c) (2) (v) changing the variable indicia of one or more suitability codes in response to the preferences received in step (e) (2) (iv) and changing the variable indicia of one or more suitability
40 codes in response to a time or date registered by the clock.

44. The method according to claim 36 including the steps of:

45 (i) (1) requesting an operator to indicate preferences for the proportions of products to be displayed which correspond to the product directories with different degrees of specificity;

(i) (2) receiving the preferences indicated in step (i) (1); and

(i) (3) limiting the proportions of products presented to the customer according to the preferences received in step (i) (2).

5

45. The method according to claim 2 including the steps of:

(i) (1) requesting an operator to indicate preferences for the proportions of products displayed to the customer having certain characteristics;

10

(i) (2) receiving the preferences indicated in step (i) (1); and

(i) (3) limiting the proportions of products presented to the customer according to the preferences received in step (i) (2).

15

46. The method according to claim 24 wherein the characteristics of the products relate to the capability of the products for modification.

20

47. A method of storing and selectively retrieving and delivering product data, comprising the steps of:

(a) storing product data relating to a plurality of products in a data storage device;

(b) storing a plurality of customer data entry sets in a data storage device, each customer data entry set indicating an allowable combination criteria for a product desired by a customer;

25

(c) storing a plurality of product lists in a data storage device and referencing on each product list the product data stored in step (a) above that relates to products having one or more anticipated common applications;

30

(c) (1) identifying with a priority rating each product whose product data is referenced on a product list, said priority rating indicative of an expert judgment of the suitability of the product for the anticipated common applications of all the products whose product data is referenced on the product list;

35

(d) connecting the product lists to the customer data entry sets;

(e) requesting a customer to indicate criteria relating to a desired product;

40

(f) receiving the criteria indicated by the customer;

(g) selecting the customer data entry set or sets that best correspond to the criteria received in step (f);

(h) retrieving from the data storage device the product lists connected to the customer data entry set or sets selected in step (g);

45

(i) retrieving and displaying data relating to the groups of products referenced on the product lists retrieved in step (h), the data relating to each product being displayed in an order dependent on the priority ratings stored in step (c) (1);

5 (j) requesting the customer to select one of the products whose data is displayed in step (i);

(k) receiving the customer's selection of a product; and

(l) delivering the product or data relating to the product selected in step (k).

10

48. The method according to claim 47 wherein the priority ratings by which products are identified in step (c) (1) are changed periodically to reflect different market conditions, owner/operator preferences or customer selection or non-selection of products
15 retrieved and displayed in step (i).

49. The method according to claim 47 including the additional steps of:

(c) (2) identifying each product whose product data is
20 referenced on a product list with one or more suitability codes each indicative of the desirability of retrieving and displaying data relating to the product in a particular circumstance;

(c) (3) converting by an algorithm the suitability
25 codes of step (c) (2) to a priority rating operator for each product; and

(c) (4) applying the priority rating operator of step
(c) (3) to the priority rating of each product to obtain a modified priority rating;

30 wherein the priority ratings used in step (i) (1) to determine the order of product display are the modified priority ratings calculated in step (c) (4).

50. The method according to claim 47 including the additional step of:

35 (k) (1) increasing the priority rating of a product each time a customer's selection of the product is received and decreasing the priority rating of a product each time the product is retrieved and displayed but not selected.

40 51. The method according to claim 49 including the additional step of:

(k) (1) increasing the priority rating of a product
each time a customer's selection of the product is received and
45 decreasing the priority rating of a product each time the product is retrieved and displayed but not selected.

52. The method according to claim 49 including the step of storing the suitability codes by which products are identified in step (c) (2) on a master suitability code list.

5 53. The method according to claim 52 including the steps of:

(c) (2) (i) storing on the master suitability code list the identities of the product lists on which the product data relating to each product is referenced.

10 54. The method according to claim 53 wherein the suitability codes of step (c) (2) contain variable indicia and the method includes the steps of:

(c) (2) (iii) requesting an operator to indicate preferences for the types of products to be displayed;

15 (c) (2) (iv) receiving the preferences indicated in step (c) (2) (iii); and

(c) (2) (v) changing the variable indicia of the suitability codes in response to the preferences received in step (c) (2) (iv).

20 55. The method according to claim 53 wherein the suitability codes of step (c) (2) contain variable indicia and the method includes the steps of storing a clock in the data storage device and changing at least some of the suitability codes in response to a time or date registered by the clock.

56. The method according to claim 54 including the steps of:

30 (c) (2) (iii) requesting an operator to indicate preferences for the types of products to be displayed;

(c) (2) (iv) receiving the preferences indicated in step (c) (2) (iii); and

35 (c) (2) (v) changing the variable indicia of one or more suitability codes in response to the preferences received in step (e) (2) (iv) and changing the variable indicia of one or more suitability codes in response to a time or date registered by the clock.

57. The method according to claim 49 including the steps of:

40 (i) (1) requesting an operator to indicate preferences for the proportions of products to be displayed which correspond to the product directories with different degrees of specificity;

(i) (2) receiving the preferences indicated in step (i) (1); and

45 (i) (3) limiting the proportions of products presented to the customer according to the preferences received in step (i) (2).

58. An apparatus that stores and selectively retrieves and product data, comprising:

(a) a data storage device in which are stored

(1) product data relating to a plurality of products,

(2) product lists referencing the product data of products having anticipated common applications and

(3) customer data entry sets indicating allowable combinations of criteria for products desired by customers,

the customer data entry sets being connected to the product lists, at least one product list being connected to a plurality of customer data entry sets;

(b) a display monitor that displays choices of criteria that a customer might desire in a product;

(c) a customer input device connected to the display monitor that receives the criteria selected by the customer;

(d) a computer connected to the customer input device that receives the customer selected criteria from the input device, selects the customer data entry set or sets that best correspond to the criteria received by the customer input device, retrieves from the data storage device the product data referenced by the product lists connected to the selected customer data entry set or sets and displays the product data on the display monitor.

59. The apparatus according to claim 58 including product directories stored in the data storage device, the product directories being connected to the product lists and to the customer data entry sets, at least one product directory being connected to a plurality of customer data entry sets and to a plurality of product lists.

60. The apparatus according to claim 59 wherein at least one customer data entry set is connected to a plurality of product directories.

61. The apparatus according to claim 59 wherein at least one product list is connected to a plurality of product directories.

62. The apparatus according to claim 58 including a plurality of menu screens stored in the data storage device, each menu screen displaying criterion choices for a customer's selection.

63. The apparatus according to claim 58 wherein one or more of the menu screens comprises a continuous scroll of criterion choices.

64. The apparatus according to claim 58 wherein a list of key words, character strings or symbols for the customer's selection are stored in the data storage device and a translator is also stored in the data storage device for translating key words, character strings or symbols selected by the customer into one or more customer data entry sets.

65. The apparatus according to claim 58 wherein the product data relating to at least some of the products stored in the data storage device is capable of modification by the customer in response to changes input through the customer input device.

66. The apparatus according to claim 58 wherein product lists stored in the data storage device include priority ratings for the products whose data is referenced by the product lists, said priority ratings being indicative of an expert judgment of the suitability of the product for the common applications of all the products whose product data is referenced on the product list.

67. The apparatus according to claim 66 including suitability codes stored in the data storage device that reference each product whose data is stored in the data storage device and indicate the desirability of retrieving and displaying that data in a particular circumstance.

68. The apparatus according to claim 67 including an algorithm stored in the data storage device for converting the suitability codes to priority rating operators.

69. The apparatus according to claim 67 including a master suitability code list stored in the data storage device that references the products whose data is stored in the data storage device with the suitability codes.

70. The apparatus according to claim 69 wherein the master suitability code list includes the identities of the product lists on which the product data relating to each product is referenced.

71. The apparatus according to claim 67 wherein the suitability codes contain variable indicia that indicate an operator preference for the types of products to be displayed.

72. The apparatus according to claim 67 including a clock stored in the data storage device and wherein at least some of the suitability codes are time sensitive and contain variable indicia that are changed in response to a time or date registered by the clock.

73. The apparatus according to claim 58 including operator preferences stored in the data storage device relating to the proportions of the types of products to be displayed to the customer and also an algorithm stored in the data storage device that limits the proportions of types of products whose data is displayed to the stored operator preferences.

74. The apparatus according to claim 59 including a plurality of menu screens stored in the data storage device, each menu screen displaying criterion choices for a customer's selection.

75. The apparatus according to claim 59 wherein one or more of the menu screens comprises a continuous scroll of criterion choices.

76. The apparatus according to claim 59 wherein a list of key words, character strings or symbols for the customer's selection are stored in the data storage device and a translator is also stored in the data storage device for translating key words, character strings or symbols selected by the customer into one or more customer data entry sets.

77. The apparatus according to claim 59 wherein the product data relating to at least some of the products stored in the data storage device is capable of modification by the customer in response to changes input through the customer input device.

78. The apparatus according to claim 59 wherein product lists stored in the data storage device include priority ratings for the products whose data is referenced by the product lists, said priority ratings being indicative of an expert judgment of the suitability of the product for the common applications of all the products whose product data is referenced on the product list.

79. The apparatus according to claim 78 including suitability codes stored in the data storage device that reference each product whose data is stored in the data storage device and indicate the desirability of retrieving and displaying that data in a particular circumstance.

80. The apparatus according to claim 79 including an algorithm stored in the data storage device for converting the suitability codes to priority rating operators.

81. The apparatus according to claim 79 including a master suitability code list stored in the data storage device that

references the products whose data is stored in the data storage device with the suitability codes.

82. The apparatus according to claim 80 wherein the master suitability code list includes the identities of the product lists on which the product data relating to each product is referenced.

83. The apparatus according to claim 79 wherein the suitability codes contain variable indicia that indicate an operator preference for the types of products to be displayed.

84. The apparatus according to claim 79 including a clock stored in the data storage device and wherein at least some of the suitability codes are time sensitive and contain variable indicia that are changed in response to a time or date registered by the clock.

85. The apparatus according to claim 59 including operator preferences stored in the data storage device relating to the proportions of the types of products to be displayed to the customer and also an algorithm stored in the data storage device that limits the proportions of types of products whose data is displayed to the stored operator preferences.

1/42

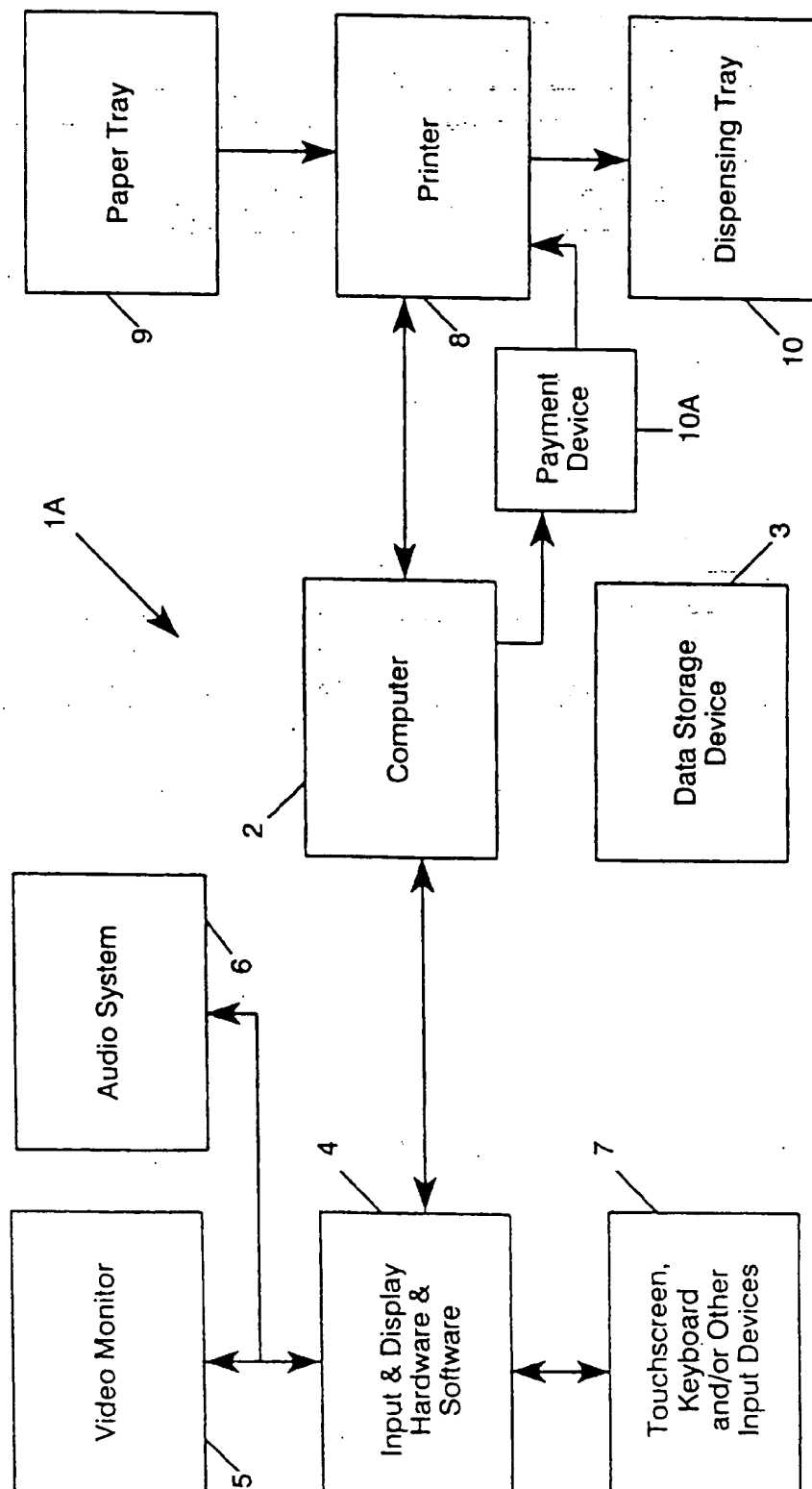


FIG. 1A

2/42

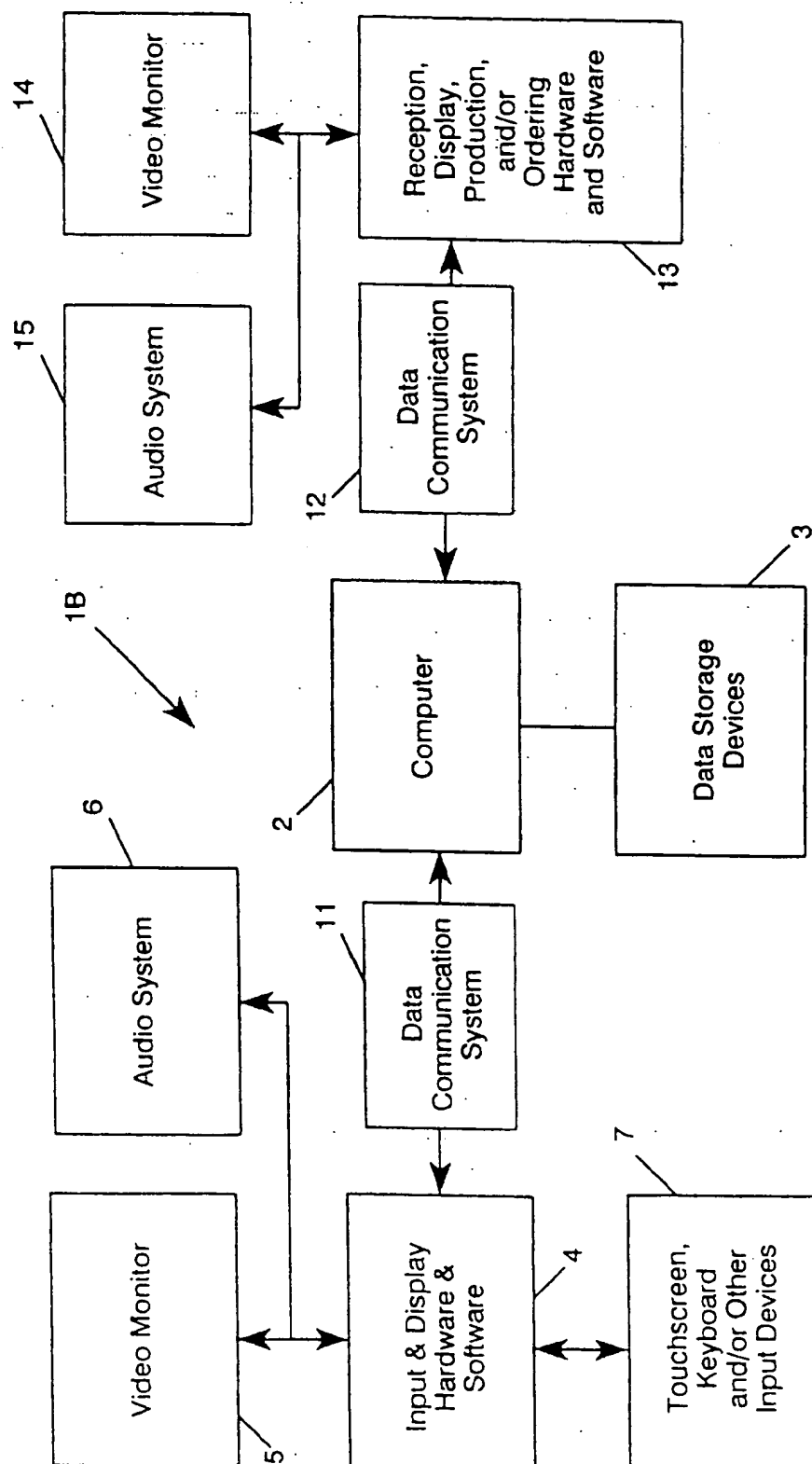


FIG. 1B

3/42

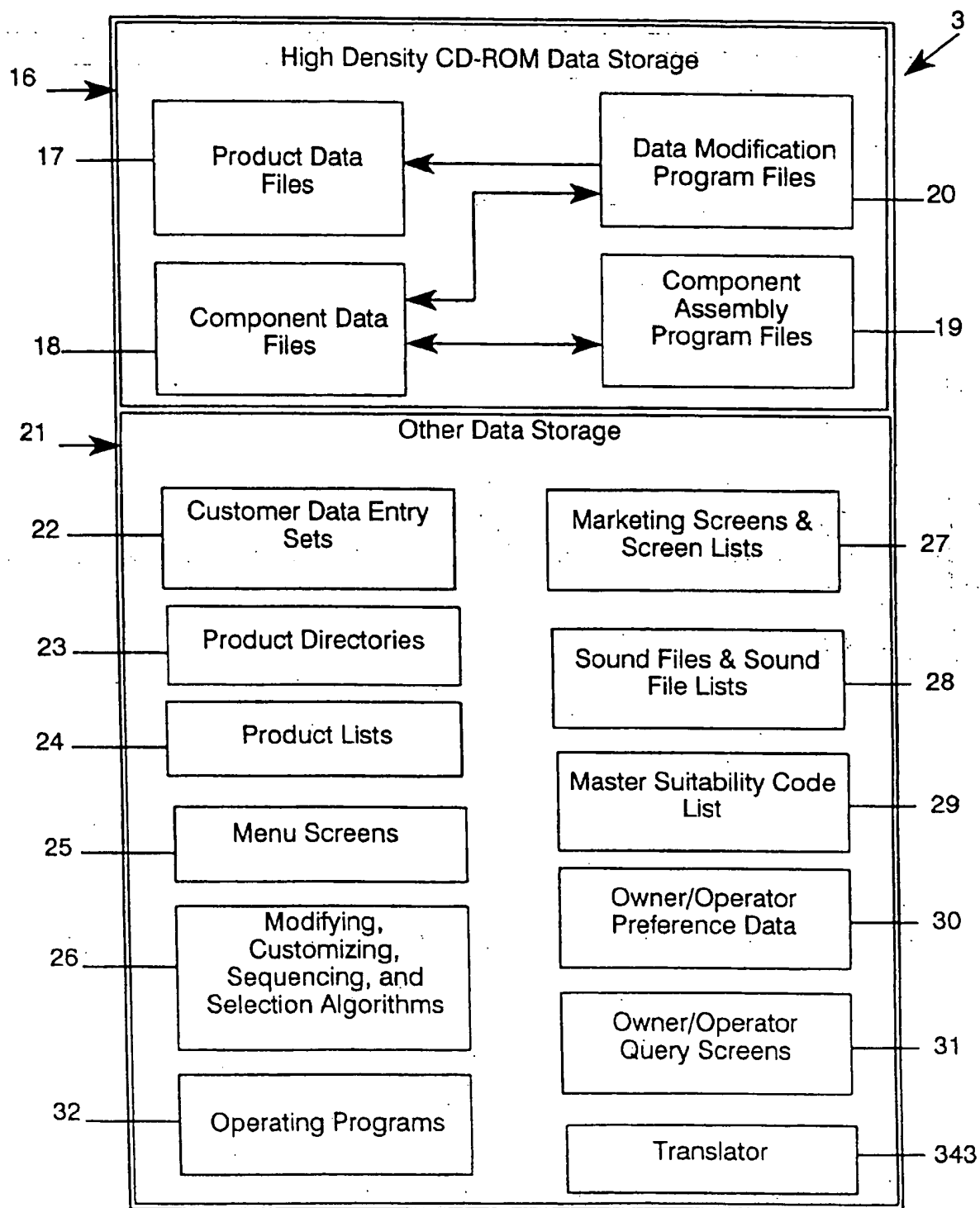


FIG. 2

SUBSTITUTE SHEET (RULE 26)

4/42

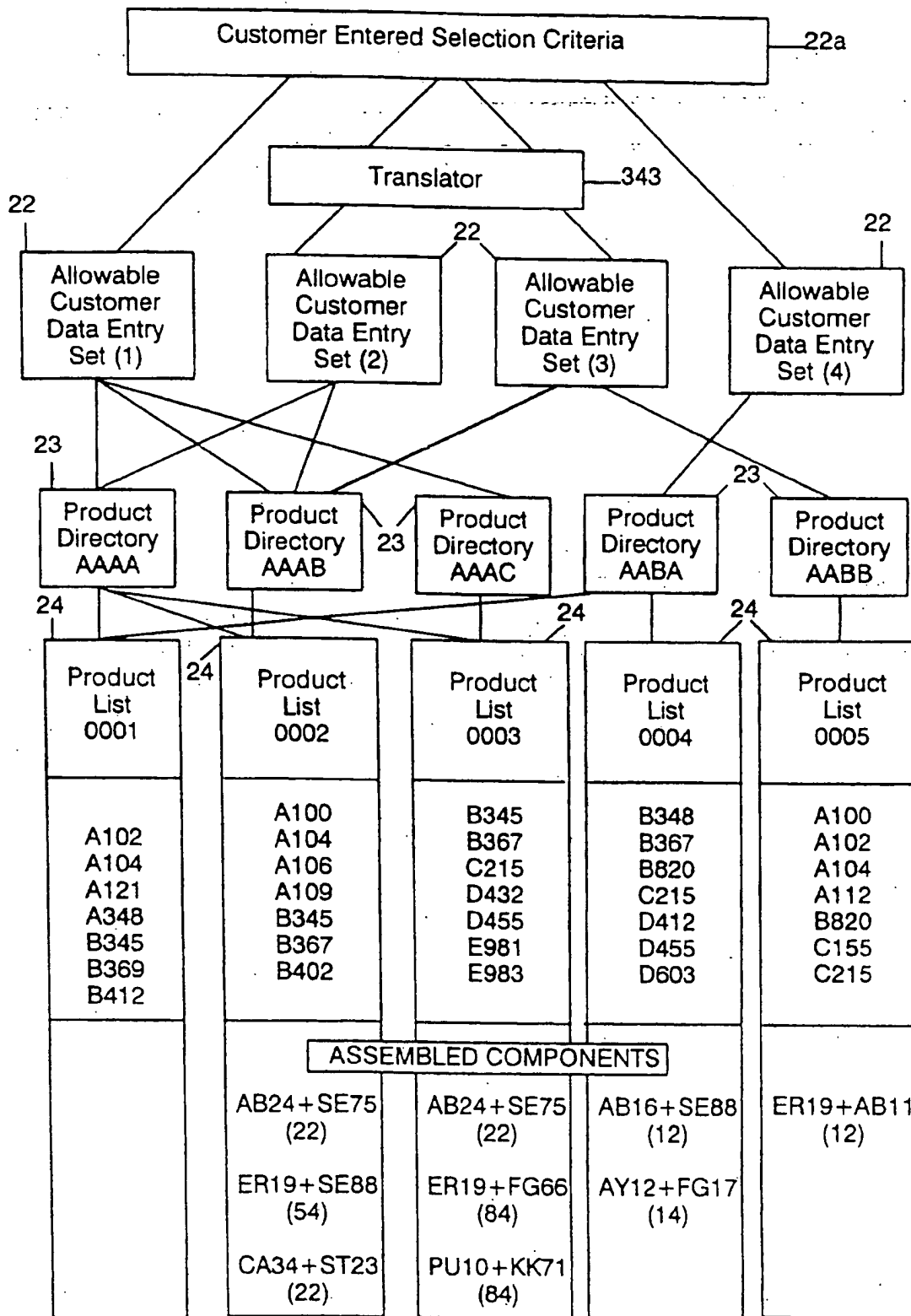


FIG. 3

SUBSTITUTE SHEET (RULE 26)

5/42

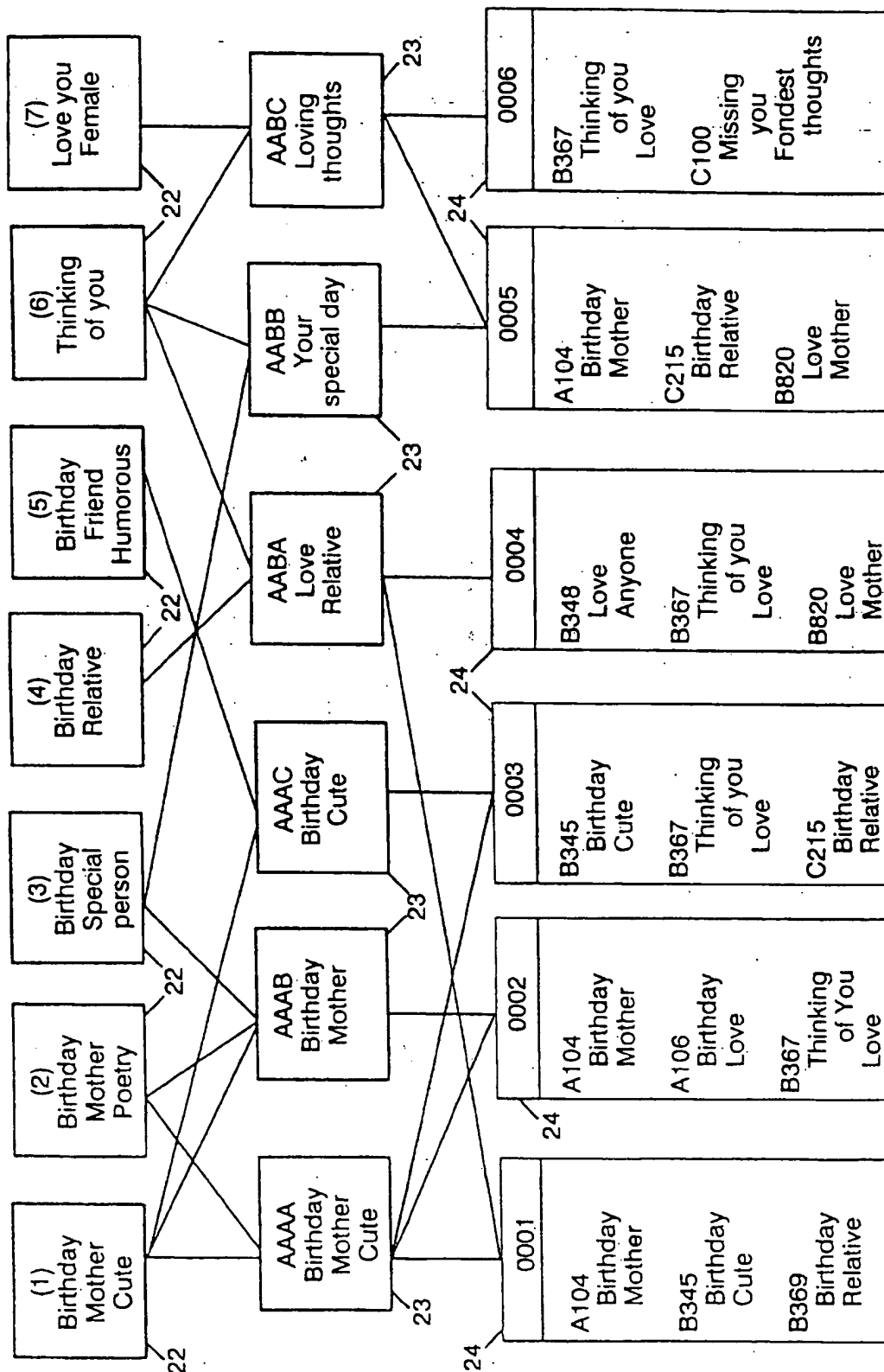


FIG. 4

6/42

TOUCH SCREEN TO CHOOSE ONE OF THE FOLLOWING MENU OPTIONS
FOR YOUR GREETING CARD

LANGUAGE:

ENGLISH	SPANISH	FRENCH
---------	---------	--------

NEXT
SCREEN

SEE
CARDS

FIG. 5

7/42

YOU HAVE CHOSEN: ENGLISH

NOW TOUCH SCREEN TO CHOOSE A MENU OF CARDS

DESIGNED FOR YOUR INTENDED PURPOSE

PURPOSE:			
<div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: 80%;"> BIRTHDAY GREETING </div>	<div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: 80%;"> GET WELL </div>	<div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: 80%;"> WEDDING ANNIVERSARY </div>	<div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: 80%;"> HOLIDAY GREETING </div>

PREVIEW OF CHOICES ON NEXT SCREEN IF BOX ABOVE IS SELECTED

<p>RELATIONSHIP OF RECIPIENT</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> NEXT SCREEN </div>	<p>TONE OF GREETING</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> PREVIOUS SCREEN </div>	<p>INTENDED RECIPIENT</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> SEE CARDS </div>	<p>WHICH HOLIDAY</p>
--	---	---	--------------------------

FIG. 6

8/42

YOU HAVE CHOSEN: ENGLISH - BIRTHDAY

NOW TOUCH SCREEN TO CHOOSE THE RELATIONSHIP OF RECIPIENT TO YOU

RELATIONSHIP:

CLOSE FRIEND	LOVER	MALE RELATIVE	FEMALE RELATIVE	CO-WORKER
-----------------	-------	------------------	--------------------	-----------

PREVIEW OF CHOICES ON NEXT SCREEN IF BOX ABOVE IS SELECTED

STYLE OF MESSAGE	STYLE OF MESSAGE	WHICH RELATIVE	WHICH RELATIVE	NO FURTHER CHOICES
NEXT SCREEN	PREVIOUS SCREEN	SEE CARDS		

FIG. 7

9/42

YOU HAVE CHOSEN: ENGLISH - BIRTHDAY - CLOSE FRIEND
NOW TOUCH SCREEN TO CHOOSE THE STYLE OF MESSAGE

STYLE:

SEXUAL INVITATION	ROMANTIC	OUTRAGEOUS HUMOR	CUTE
SENTIMENTAL	GENERAL GREETINGS (NO SPECIFIC MESSAGE)	NO INSIDE TEXT (YOU WILL ADD)	BLANK STOCK (YOU WILL CREATE DESIGN OR MESSAGE)

THIS IS THE LAST MENU SCREEN. YOU MAY EITHER VIEW
PREVIOUS SCREENS OR MAKE ONE OR MORE MENU SELECTIONS
AND THEN VIEW A SELECTION OF CARDS THAT REPRESENTS
A MIXTURE OF YOUR CHOICES.

PREVIOUS
SCREEN

SEE
CARDS

FIG. 8

10/42

SCROLL TYPE MENU

LANGUAGE:

ENGLISH
FRENCH
SPANISH

PURPOSE:

BIRTHDAY GREETING
GET WELL
WEDDING ANNIVERSARY
HOLIDAY GREETING

MESSAGE STYLE:

SENTIMENTAL
CUTE
HUMOROUS

TEXT STYLE:

POETRY
PROSE
BLANK
INSIDE

RELATIONSHIP:

RELATIVE
FRIEND
LOVER
CO-WORKER
(Choose one
or more from
this column)

PLEASE MAKE NEXT CHOICE IN THIS COLUMN

SO FAR, YOU HAVE CHOSEN:

ENGLISH - BIRTHDAY GREETING - CUTE - POETRY

DO YOU WISH TO SEE A SELECTION OF CARDS NOW OR CHOOSE FROM ADDITIONAL MENUS?

DISPLAY CARD SELECTION NOW

SHOW MORE SUB-MENUS

DO YOU WISH TO SEE A MIXTURE OF GENERAL AND SPECIFIC CARDS?

GENERAL ONLY

SPECIFIC ONLY

MIXTURE OF GENERAL AND SPECIFIC

FIG. 9

11/42

PRODUCT LIST 0010

Connected Directories		Use Descriptions
Primary	ABBB	Birthday - Cute - Poetry
	ABBA	Birthday - Cute
	ABAA	Birthday

← 24 →

PRODUCTS CLASSIFIED BY SPECIFICITY

GENERAL (Meets 1 Use Description)		Product Codes
Birthday		A100, A107 A116
Love - Poetry		A135, B410 B516
Thinking of you Cute		A143, B062

MODERATELY SPECIFIC (Meets 2 Use Descriptions)		Product Codes
Birthday - Cute		A124, B345 B411
Birthday - Cute Thinking of you		A135, A137
Birthday - Love Poetry		A246, B311

SPECIFIC (Meets 3 Use Descriptions)		Product Codes
Birthday - Cute Poetry		A109 B172
Birthday - Cute Friend - Poetry		A108
Birthday - Cute Relative - Poetry		A406

FIG. 10A

12/42

PRODUCT LIST 0011

Connected Directories		Use Descriptions		
Primary	ACAA	Friendship -	Romantic -	Cute
	ACAB	Friendship -	Romantic -	Humorous

← 24
↓

PRODUCTS CLASSED BY MODIFIABILITY

NOT MODIFIABLE

Use Descriptions	Product Codes
Friendship - Romantic Humorous	A155 A159
Thinking of you Cute	B062

**MODIFIABLE BY CUSTOMER
(FILL IN BLANKS)**

Use Descriptions	Product Codes
Friendship - Romantic Anyone to anyone	A253
Any occasion Romantic - Humorous	C141 D061

**MODIFIABLE BY CUSTOMER
(DELETE AND REPLACE)**

Use Descriptions	Product Codes
Friendship - Romantic Poetry Male to female	A255
Birthday - Cute	B041

**MODIFIABLE BY COMPUTER
(DELETE INSIDE TEXT)**

Use Descriptions	Product Codes
Friendship - Romantic Poetry (inside)	B050 B013

FIG. 10B

13/42

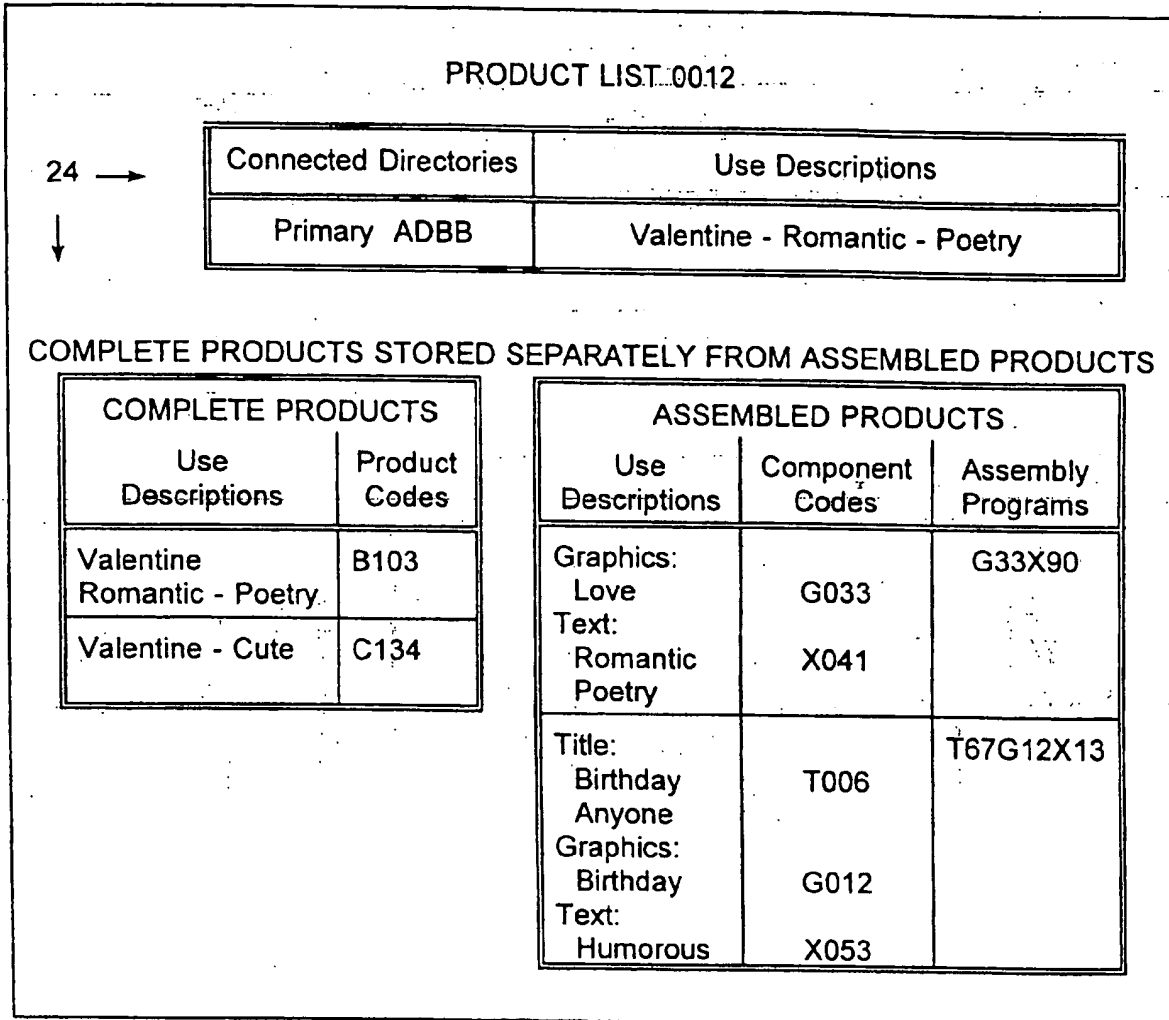


FIG. 10C

14/42

↓ 24

PRODUCT LIST 0013

Connected Directories				Use Descriptions		
A) Primary ABCC				Birthday-Friend-Humorous		
B) ABCA				Birthday-Friend-Cute		
C) ABDC				Birthday-Any Relative-Humorous		
Product Code	Other Lists	Use Descriptions	Mod. Prog.	Use Desc. Cov'g	Base Priority Ratings	Modified Priority Ratings
		COMPLETE PRODUCTS				
A121	None	Birthday - Friend Humorous	None	A3 B2 C2	A3.0 B2.6 C2.5	A3.1 B2.9 C2.5
A223	0023	Birthday - Friend Humorous	None	A3 B2 C2	A3.5 B2.8 C2.8	A3.2 B2.4 C2.6
A234	0023 0072	Birthday - Friend Humorous	None	A3 B2 C2	A2.6 B2.0 C2.3	A2.6 B2.0 C2.3
B156	0035	Friend - Humorous	None	A2 B1 C1	A1.6 B1.1 C0.9	A1.7 B1.2 C1.0
B157	0022	Birthday Brother - Cute	CDT	A1 B2 C1	A3.0 B7.3 C3.5	A2.7 B6.7 C3.1
C054	0061	Father's Day Humorous	CDT CDP	A1 B0 C1	A1.8 B0.5 C2.0	A1.9 B0.6 C2.1
C112	0035 0037	Any Occasion Anyone - Cute	None	A0 B1 C0	A1.3 B1.6 C0.8	A1.5 B1.7 C0.9
C200	None	Numbered Birthday Humorous	FIB	A2 B1 C0	A4.6 B1.9 C2.2	A4.9 B2.1 C2.3
		ASSEMBLED PRODUCTS				
T012	0032	Title: Birthday Anyone	T6G5X	A2 B1 C2	A5.4 B2.4 C3.8	A5.5 B2.4 C3.7
X022 G014	0035 0065	Text: Humorous Graph: Birthday				
P122	0039 0067	Page 1: Birthday Friend	T1G3X	A2 B2 C1	A2.6 B2.8 C1.5	A2.8 B2.9 C1.6
P246		Page 2: Cute				
24b	24c	24d	24e	24f	24g	24h

FIG. 10D

SUBSTITUTE SHEET (RULE 26)

15/42

SUITABILITY CODING SYSTEM			
GENERAL FACTOR	SPECIFIC FACTOR	FACTOR SUITABILITY	CODE
(A) Location	(A) College Town	(1) Highly Suitable	AA1
		(2) Moder. Suitable	AA2
		(4) Mod. Unsuitable	AA4
		(5) Highly Unsuit.	AA5
	(B) Canada	(1) Highly Suitable	AB1
		(3) Neutral	AB3
		(5) Highly Unsuit.	AB5
		(7) Precluded	AB7
	(C) Tourist Area	(1) Highly Suitable	AC1
		(3) Neutral	AC3
		(5) Highly Unsuit.	AC5
(B) Types of Customers	(A) Retired	(1) Highly Suitable	BA1
		(3) Neutral	BA3
		(5) Highly Unsuit.	BA5
	(B) Teen Age	(1) Highly Suitable	BB1
		(3) Neutral	BB3
		(5) Highly Unsuit.	BB5
	(C) Office Workers	(1) Highly Suitable	BC1
		(3) Neutral	BC3
(C) Special Time Periods	(A) Football (Aug.-Jan.)	(1) Highly Suitable	CA1
		(3) Neutral	CA3
	(B) Summertime (Jun.-Sept.)	(1) Highly Suitable	CB1
		(2) Moder. Suitable	CB2
		(3) Neutral	CB3
	(C) Noon Break	(1) Highly Suitable	CC1
		(3) Neutral	CC3
(F) Design Freshness	(A) 1993 and +	(1) Highly Suitable	FA1
	(B) 1992 and -	(3) Neutral	FA3
(P) Owner/Oper. Preferences	(A) Sexual Theme	(1) Highly Suitable	PA1
		(3) Neutral	PA3
		(7) Precluded	PA7
	(B) Drinking Theme	(3) Neutral	PB3
		(7) Precluded	PB7

FIG. 11

SUBSTITUTE SHEET (RULE 26)

16/42

MASTER SUITABILITY CODE LIST		
PRODUCT CODE	PRODUCT LISTS ON WHICH PRODUCT CODE APPEARS	SUITABILITY CODES
A104	0001 Birthday - Mother - Cute	AA2, AB1, AC3, AD3, BA1, BB1, FA1
	0002 Birthday - Mother	
	0005 Your special day	
B366	0023 Friendship - Romantic - Sexual innuendo	AA1, AB3, BA5, BC1, PA3
	0025 Friendship - Humorous - Sexual innuendo	
	0033 Thinking of you - Sexual innuendo	
B215	0028 Friendship - How much you mean	AB1, AD5, BA1
	0041 Thoughts of love - Female to female	AB1, AC3, AD5, BA3, BC1
C105	0051 Football - Quarterbacks - Greetings	AB7, AC3, BB1, CA1, FB5
A301	0073 Graduation - Congratulations - Male	AA1, AB3, AC3, AD5, CB1, DA1
	0037 Congratulations - To male	AB3, AD5, BC1
B191	0084 Father's Day - From grandchild - Cute	AA5, AB1, AC2, AD5, BA5, BB1, CA3, CB1, FA1
	0082 Father's Day - Love	
A162	0046 Love and kisses - Humorous	AA1, AD5, BA5, BC3
	0014 Birthday - Love - Humorous	

FIG. 12

SUBSTITUTE SHEET (RULE 26)

17/42

**EXPERT QUERY FORM
FOR ENTERING SUITABILITY CODE DATA**

<u>Suitability Factor</u>	<u>Factor Portion of Suitability Code</u>	<u>Enter Rating Portion of Suitability Code:</u>
PRODUCT CODE 0001		
Location		
College Town	AA	<u>2</u>
United States	AU	<u>1</u>
United Kingdom	AZ	<u>5</u>
Suburban	AS	<u>3</u>
Tourist Area	AC	<u>5</u>
Customers		
Retired	BA	<u>5</u>
Teen Age	BB	<u>1</u>
Office Workers	BC	<u>1</u>
Time Periods		
Noon Break	CC	<u>3</u>
Spring	CS	<u>1</u>
PRODUCT CODE 0091		
Location		
College Town	AA	<u>5</u>
Northeastern United States	AN	<u>1</u>
Florida	AF	<u>2</u>
Customers		
Middle Income	BM	<u>1</u>
Factory Workers	BF	<u>4</u>
Airport Travelers	BT	<u>2</u>
Time Periods		
Sunday	CR	<u>1</u>

Enter Factors Relating to Owner Operator Preferences:

	<u>Factor</u>	<u>Factor Portion of Code</u>
PRODUCT CODE 0023	<u>Sexual Theme</u>	<u>PA</u>
	<u>1993 & Later</u>	<u>FA</u>
PRODUCT CODE 0025	<u>Drinking Theme</u>	<u>PB</u>
	<u>1992 & Earlier</u>	<u>FB</u>

FIG. 13

SUBSTITUTE SHEET (RULE 26)

18/42

OWNER/OPERATOR:**CHOOSE THE SUITABILITY OF PRODUCTS WITH SEXUAL THEMES:**

- | | | | |
|-------|---------------------|-------|-----------------------|
| (PA1) | HIGHLY SUITABLE | (PA4) | MODERATELY UNSUITABLE |
| (PA2) | MODERATELY SUITABLE | (PA5) | HIGHLY UNSUITABLE |
| (PA3) | NEUTRAL | (PA6) | PROHIBIT |

CHOOSE THE SUITABILITY OF PRODUCTS WITH DRINKING THEMES:

- | | | | |
|-------|---------|-------|----------|
| (PB3) | NEUTRAL | (PB7) | PROHIBIT |
|-------|---------|-------|----------|

CHOOSE YOUR PREFERENCE FOR PRODUCT FRESHNESS:

- | | |
|-------|---|
| (FA1) | PREFER 1993 AND LATER PRODUCTS |
| (FA3) | NEUTRAL ON WHETHER PRODUCTS ARE 1993 OR LATER |

FIG. 14A

19/42

OWNER/OPERATOR:

CHOOSE THE DESIRED PERCENTAGE OF PRODUCTS
HAVING THE FOLLOWING CHARACTERISTICS:

ENTER PERCENTAGE,
DIVISIBLE BY 10:
(PERCENTAGES SHOULD TOTAL
100% IN EACH CATEGORY)

SPECIFICITY OF DESIGN:

MAXIMUM SPECIFICITY (4 MATCHING USE DESCRIPTIONS): _____

MODERATE SPECIFICITY (3 MATCHING USE DESCRIPTIONS): _____

LITTLE SPECIFICITY (2 MATCHING USE DESCRIPTIONS): _____

GENERAL _____

WRITE YOUR OWN _____

CAPABILITY FOR CUSTOMER MODIFICATION:

FILL IN THE BLANKS _____

DELETE WORDS/PHRASES/PAGES _____

NOT MODIFIABLE _____

CAPABILITY FOR COMPUTER MODIFICATION:

NOT MODIFIABLE _____

DELETE WORDS/PHRASES/PAGES _____

ALTER WORDS/PHRASES/PAGES _____

PRODUCT ASSEMBLY:

PRE-ASSEMBLED PRODUCT _____

COMPUTER ASSEMBLE FROM COMPONENTS _____

NUMBER OF PRODUCTS DISPLAYED TO CUSTOMER:

MAXIMUM NUMBER _____

FIG. 14B

20/42

OWNER/OPERATOR:

INDICATE THE LOCATION OF YOUR MACHINE:

NORTHERN UNITED STATES

SOUTHERN UNITED STATES

FLORIDA

UNITED KINGDOM

CANADA

SUBURBAN

COLLEGE TOWN

TOURIST AREA

INDICATE THE TYPE OF CUSTOMERS
MOST OFTEN USING THIS MACHINE:

RETIRED

TEEN AGE

YOUNG ADULTS

OFFICE WORKERS

FACTORY WORKERS

FIG. 15

21/42

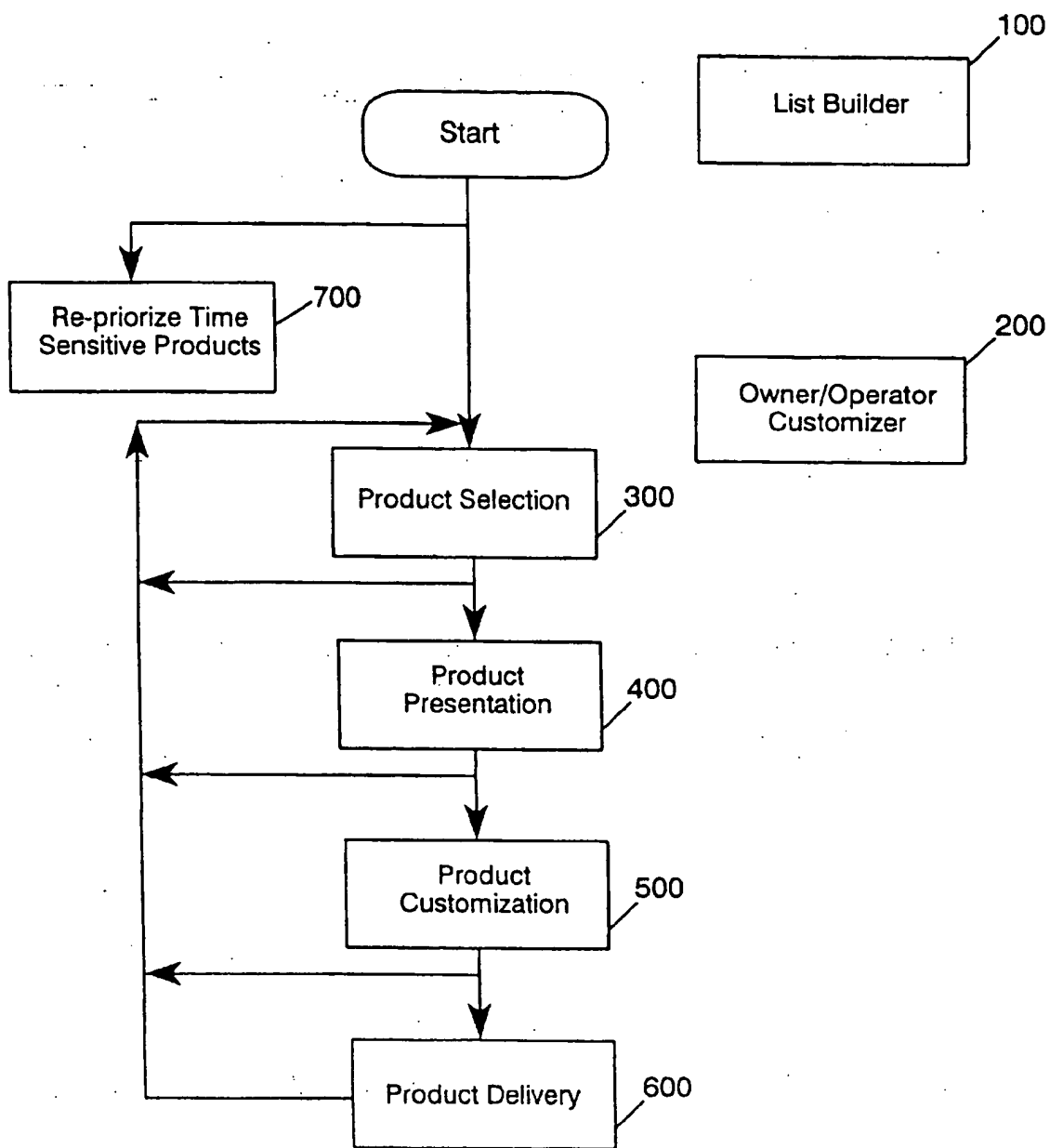


FIG. 16

22/42

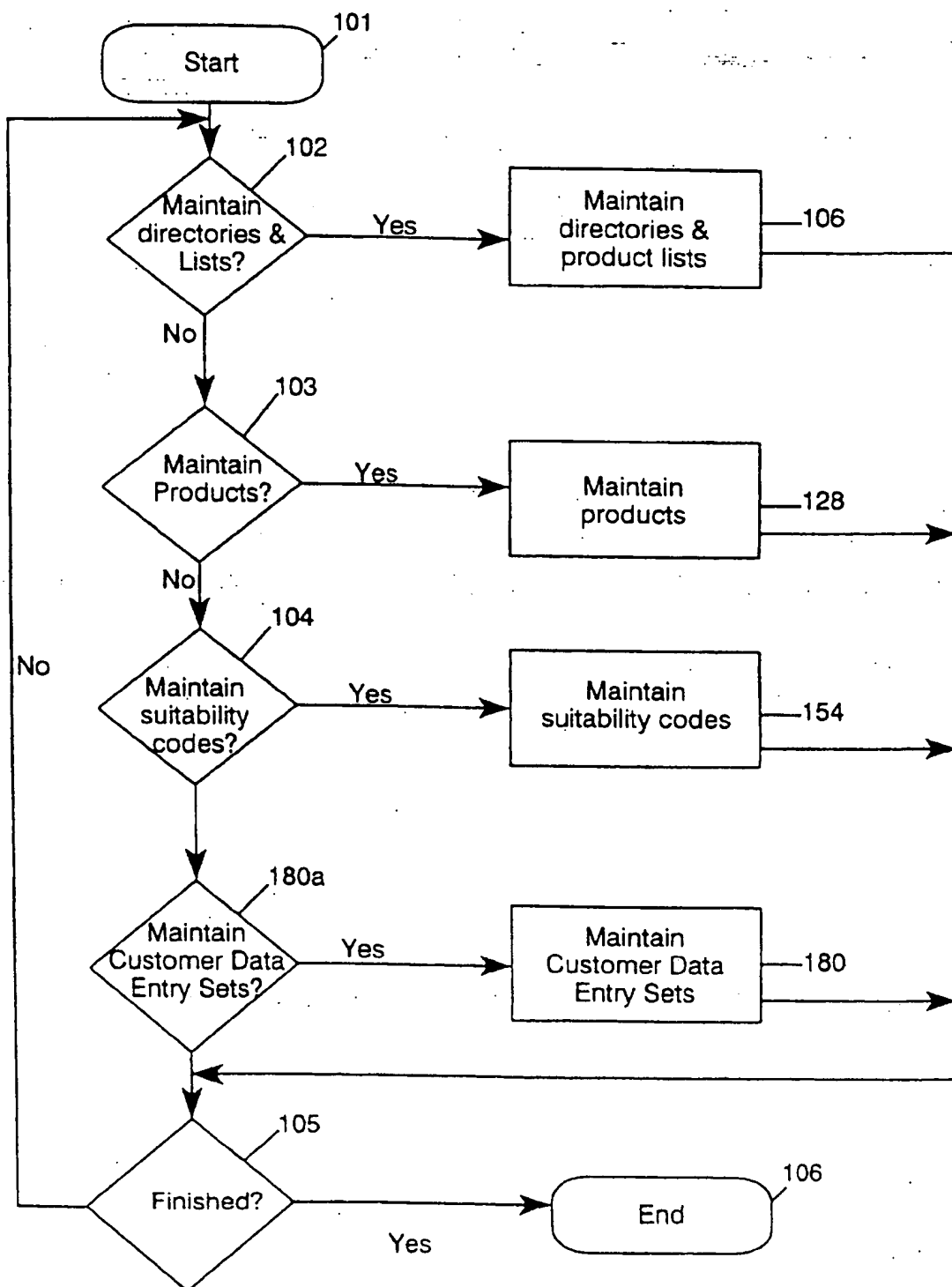


FIG. 17

SUBSTITUTE SHEET (RULE 26)

23/42

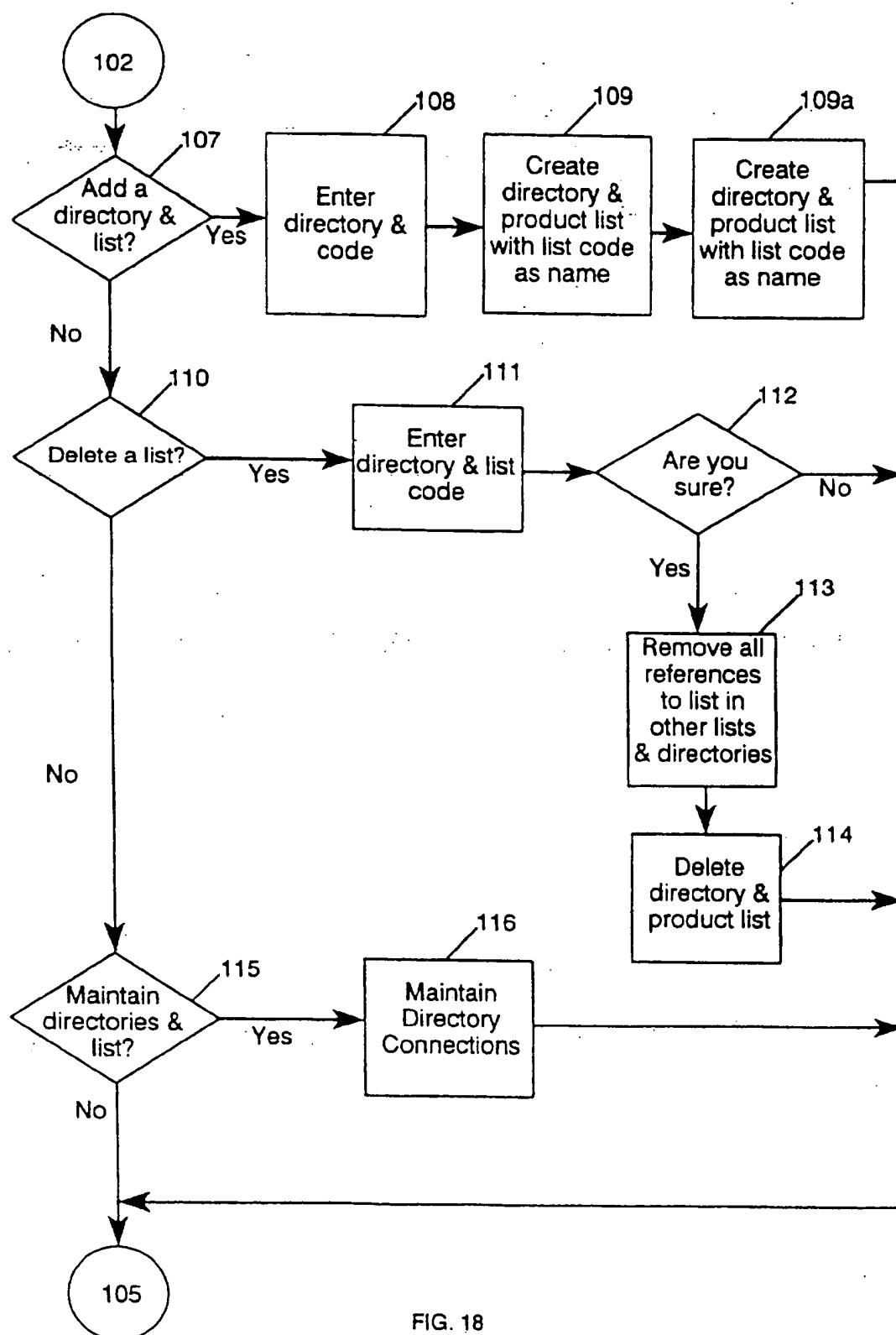


FIG. 18

SUBSTITUTE SHEET (RULE 26)

24/42

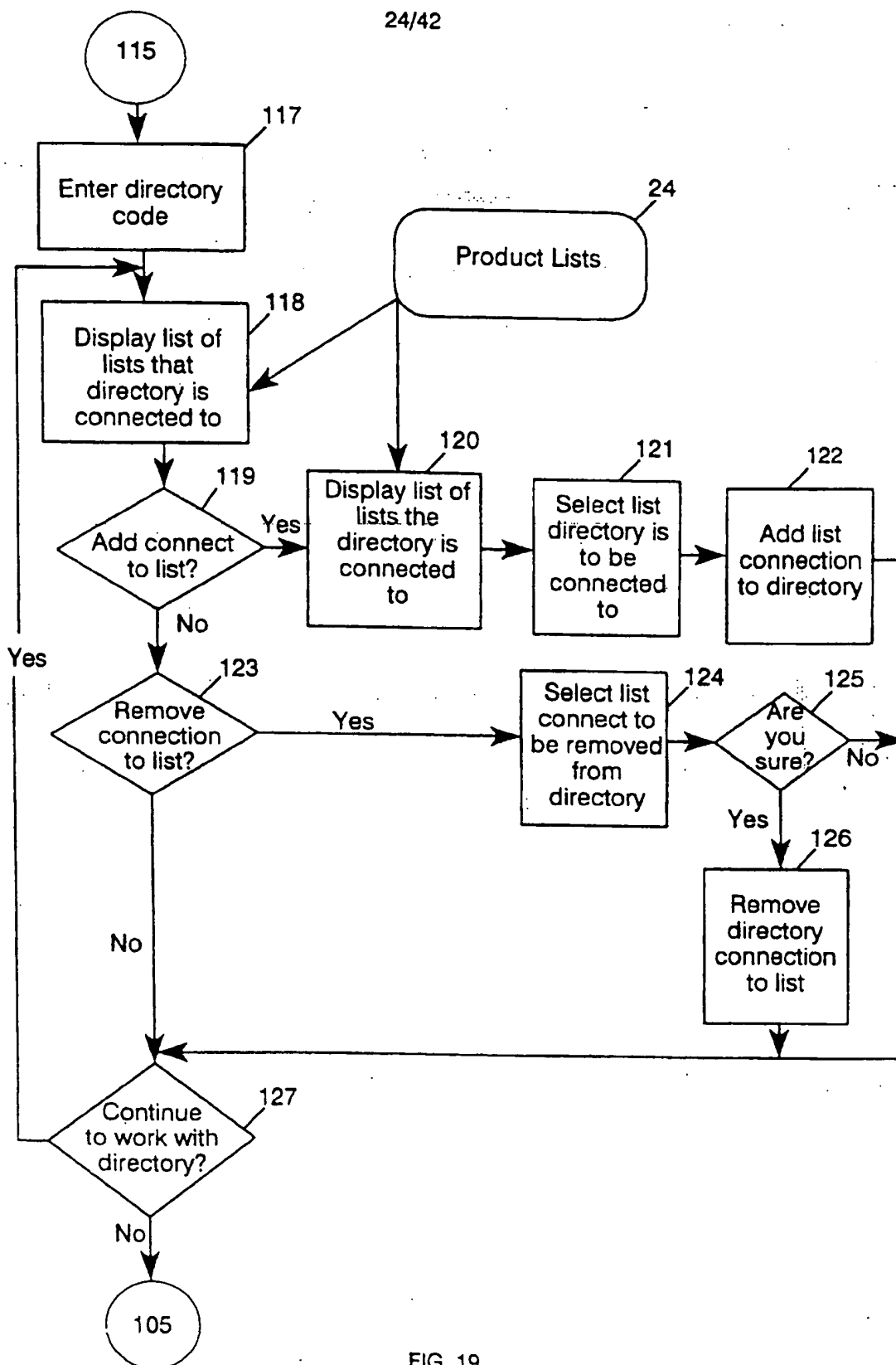
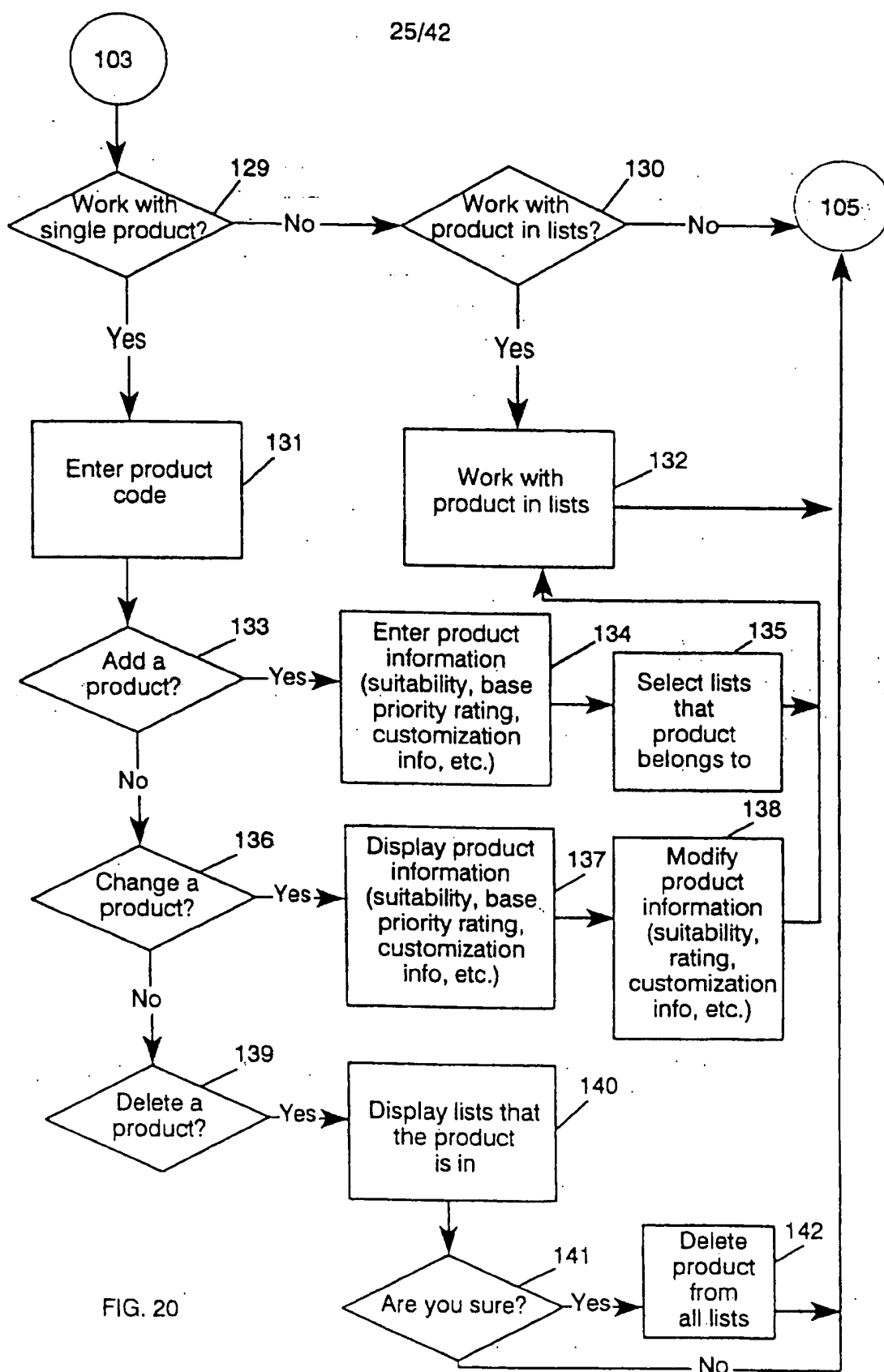
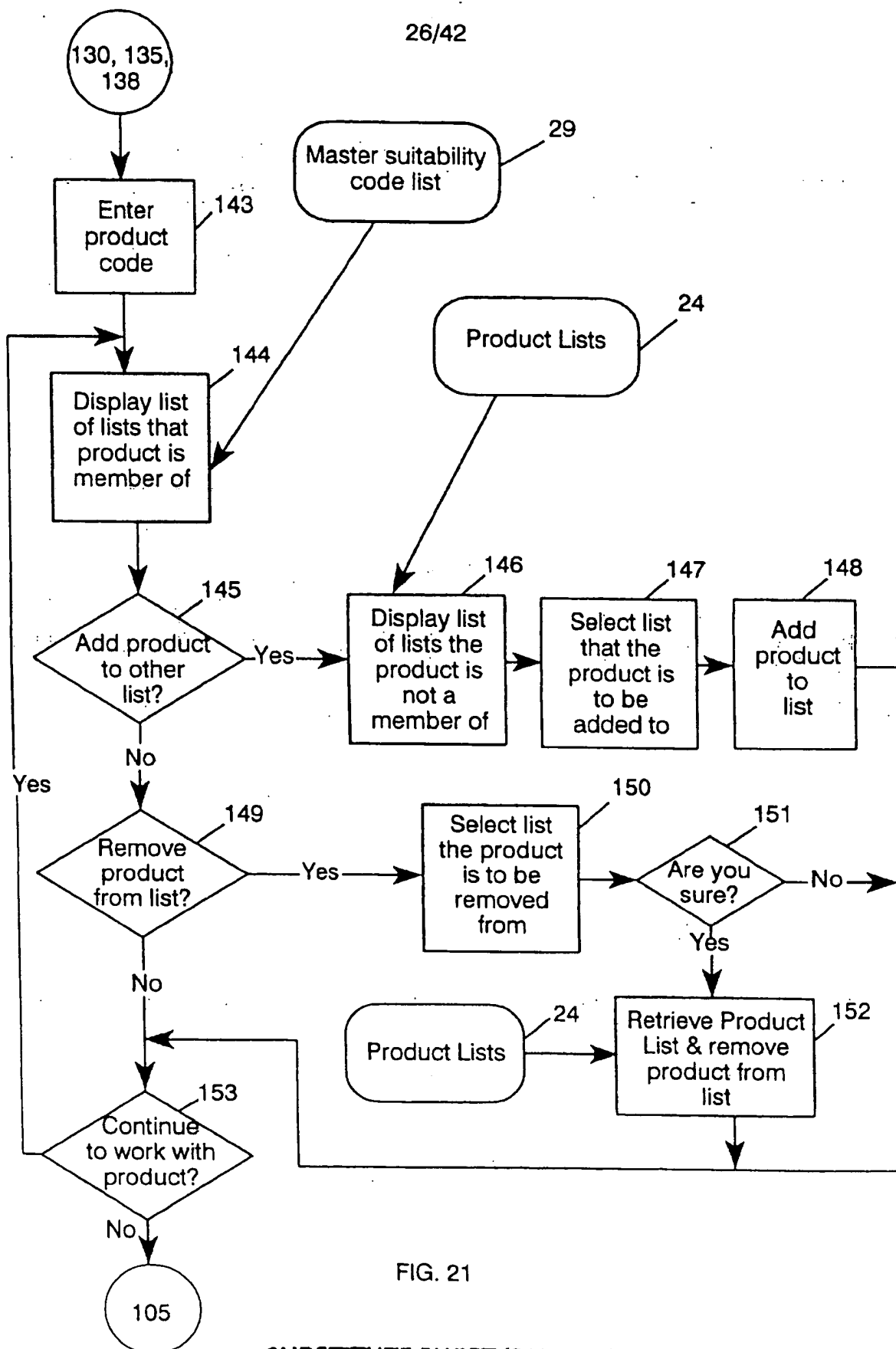


FIG. 19

SUBSTITUTE SHEET (RULE 26)

25/42





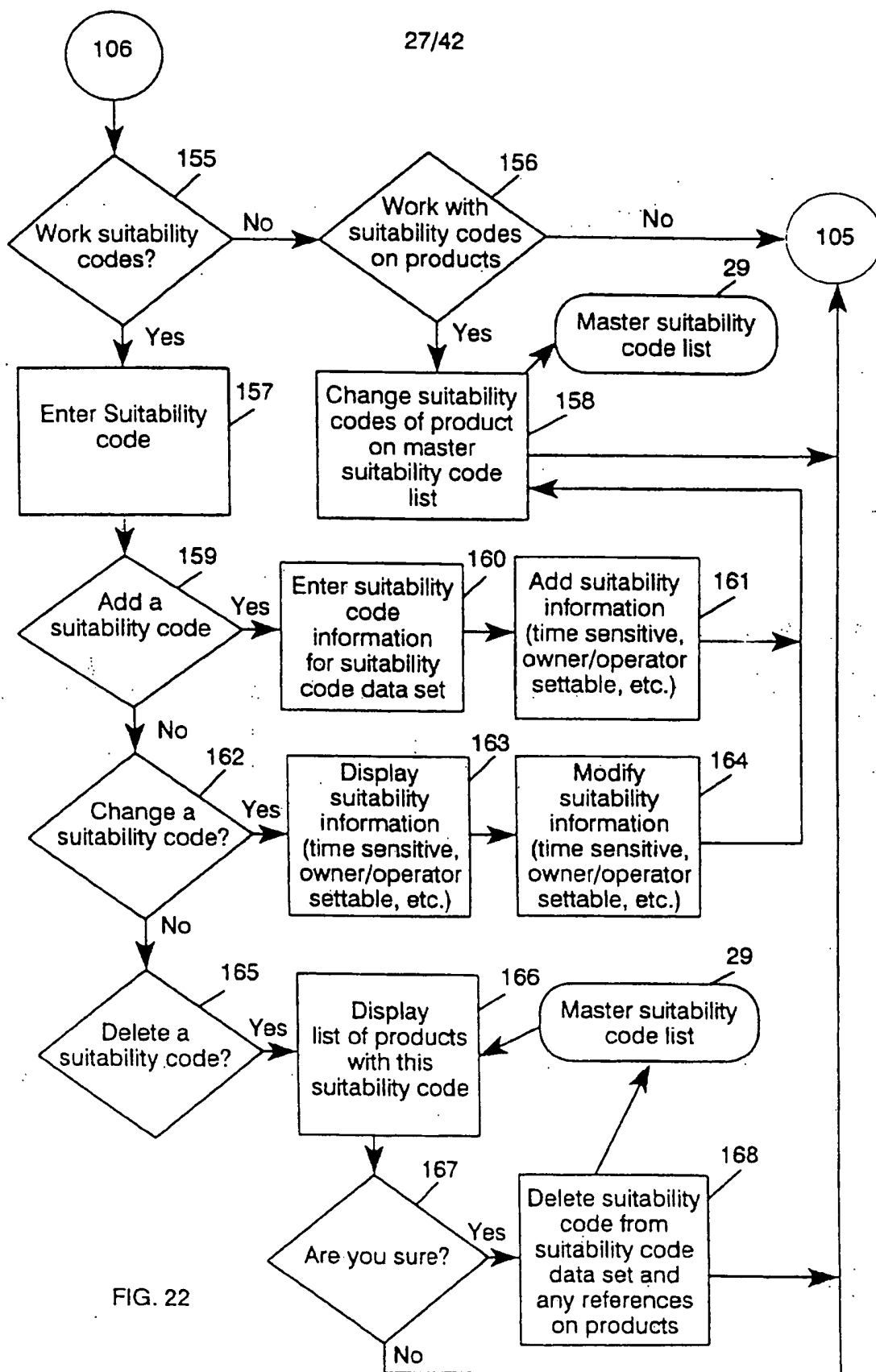


FIG. 22

28/42

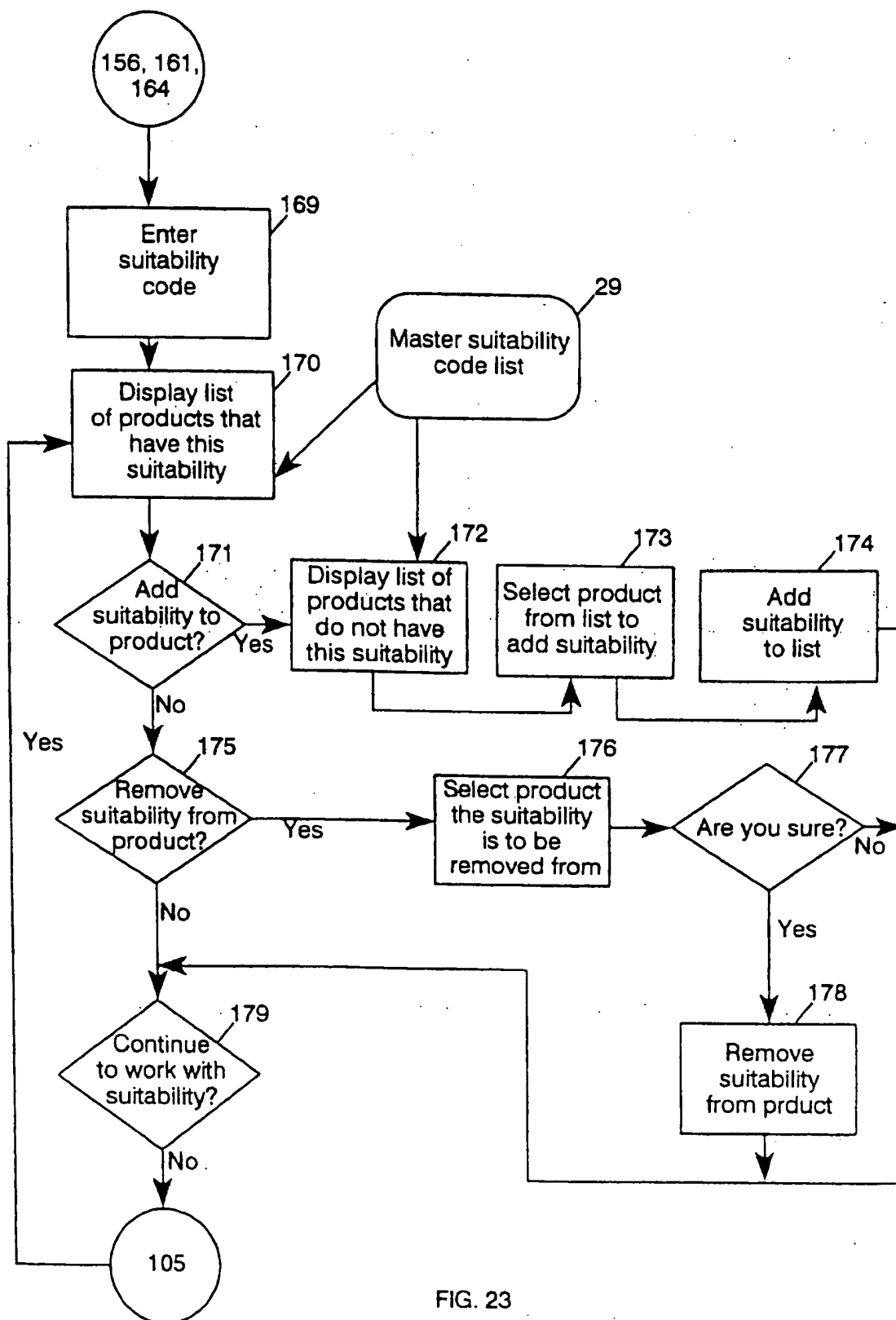


FIG. 23
SUBSTITUTE SHEET (RULE 26)

29/42

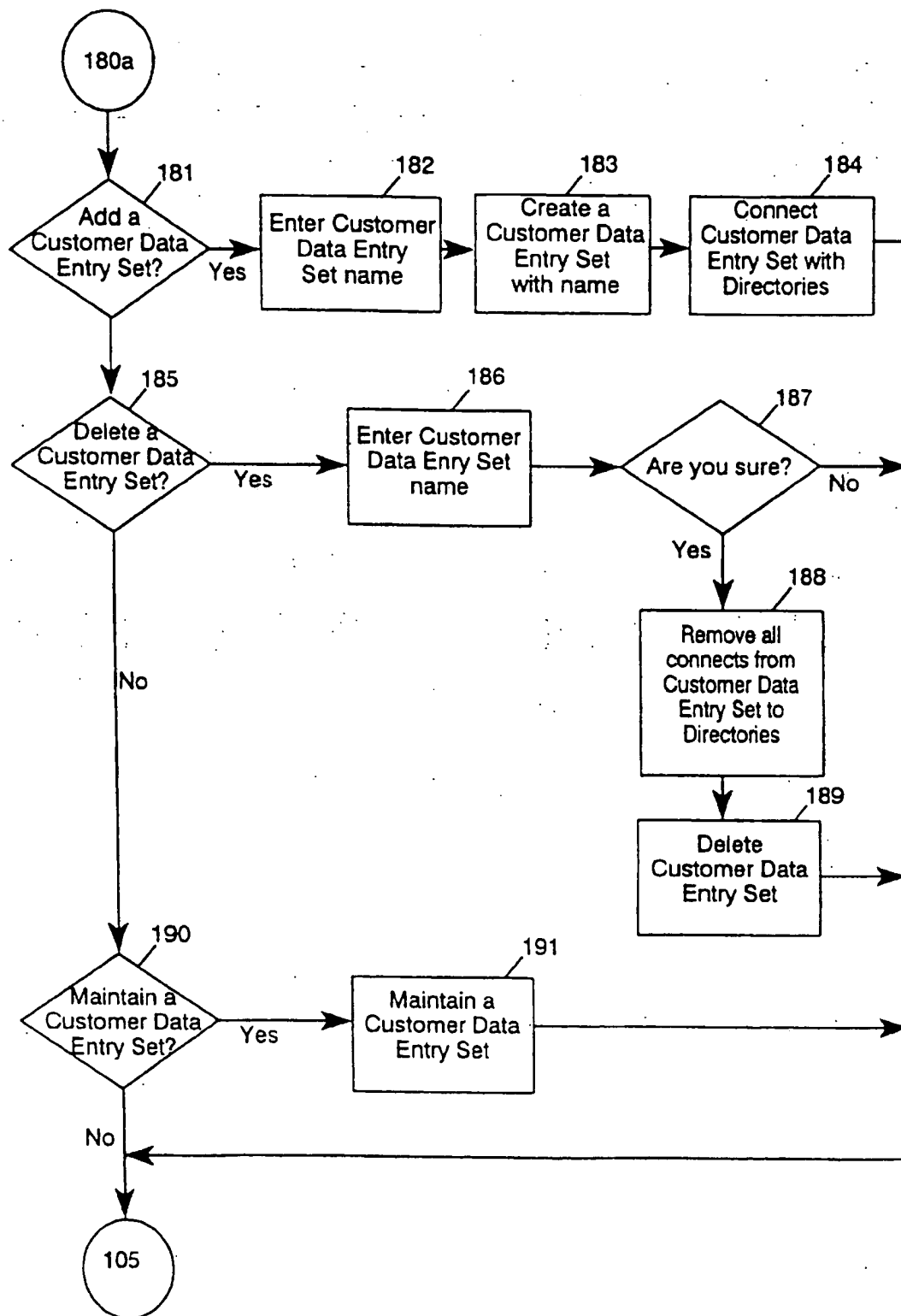


FIG. 24

SUBSTITUTE SHEET (RULE 26)

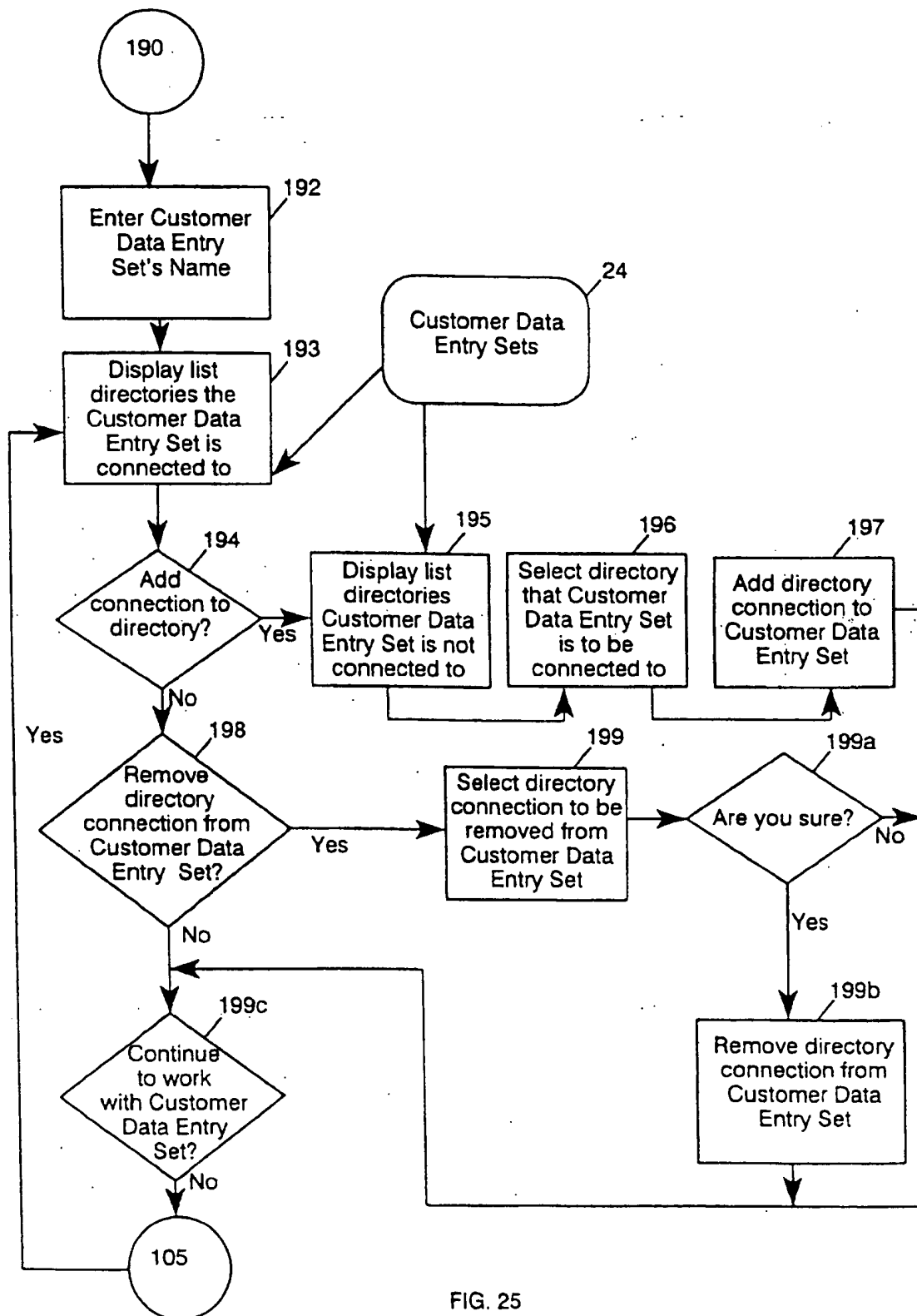
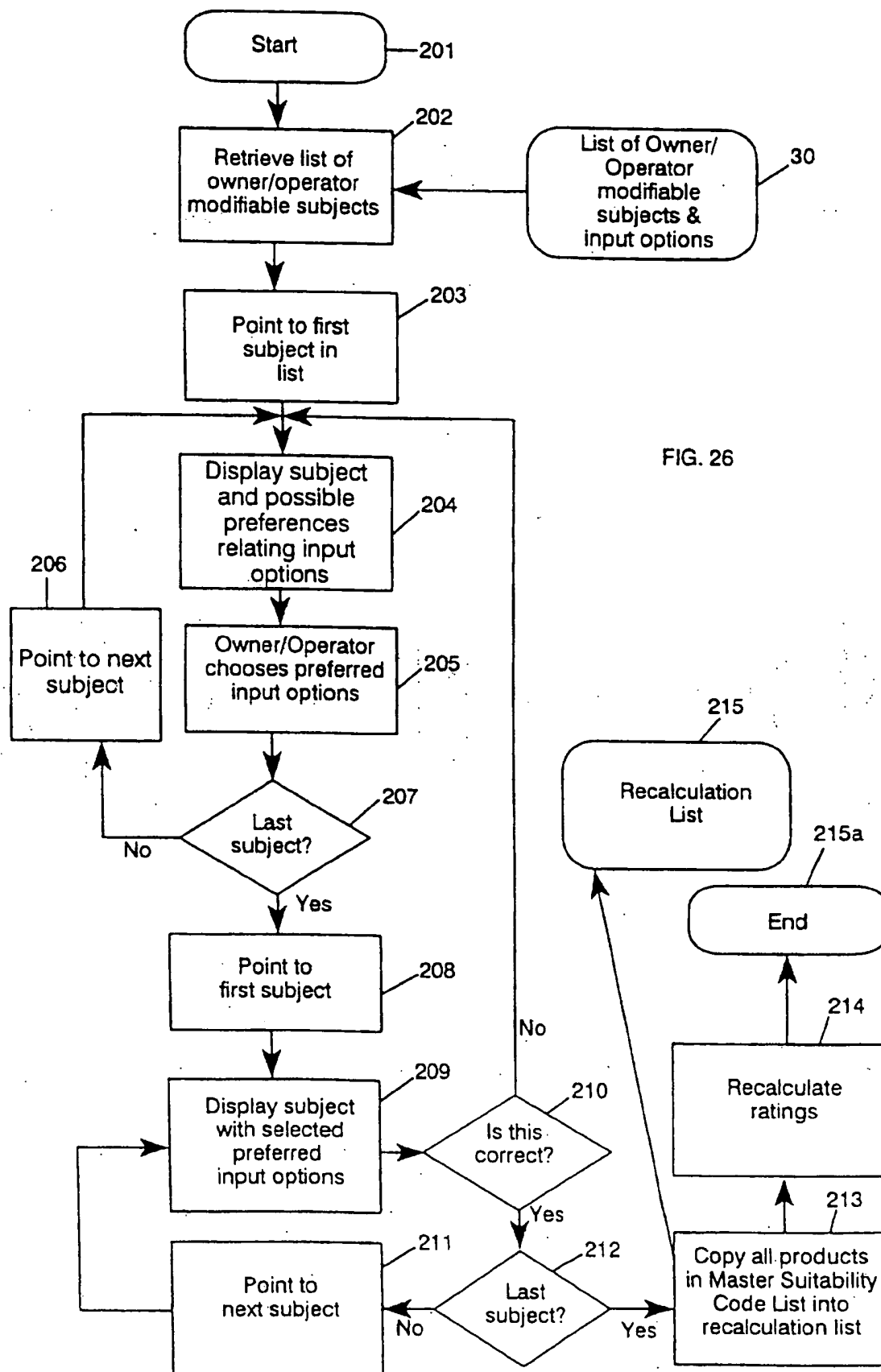
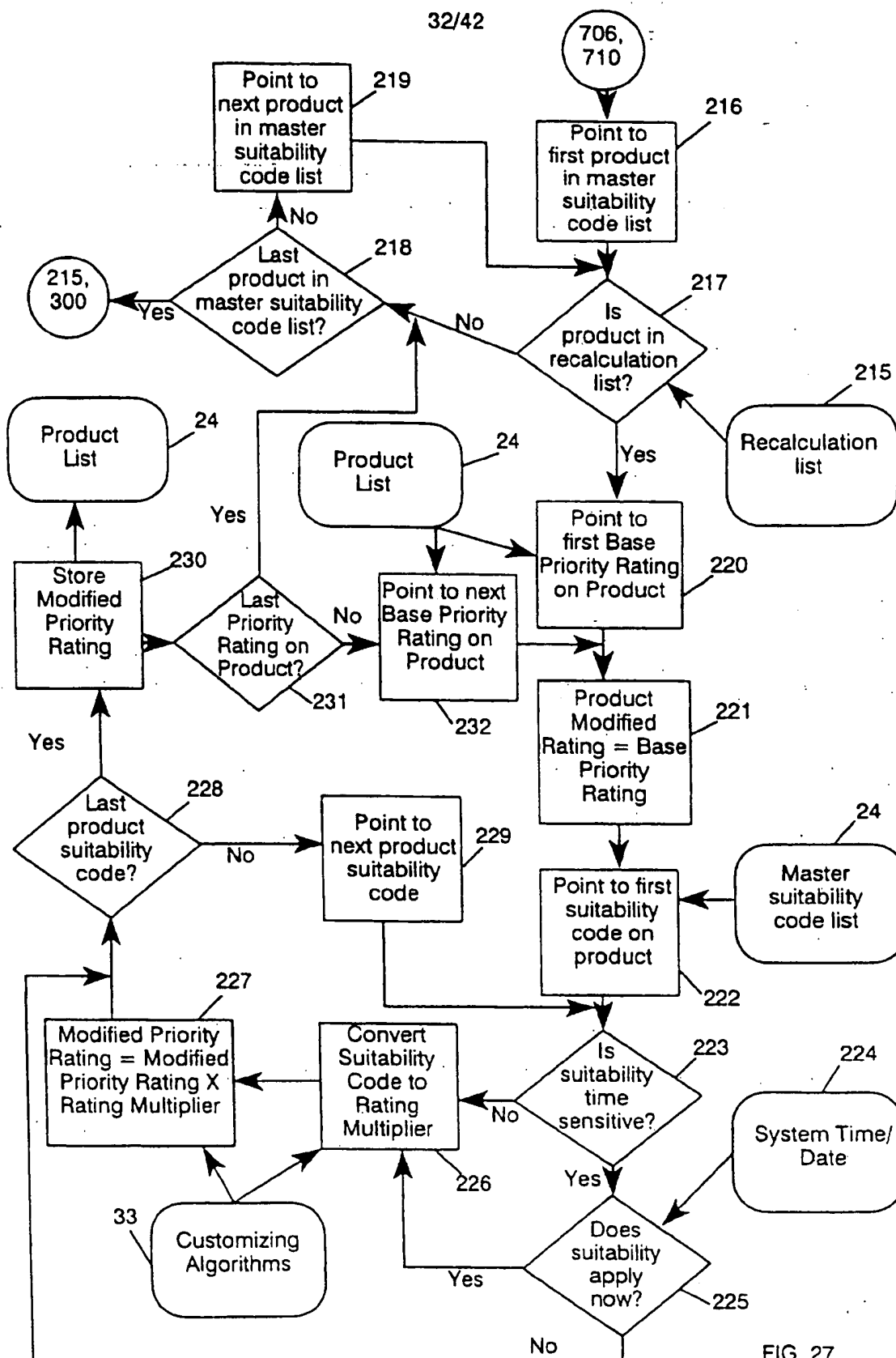


FIG. 25

SUBSTITUTE SHEET (RULE 26)

31/42





33/42

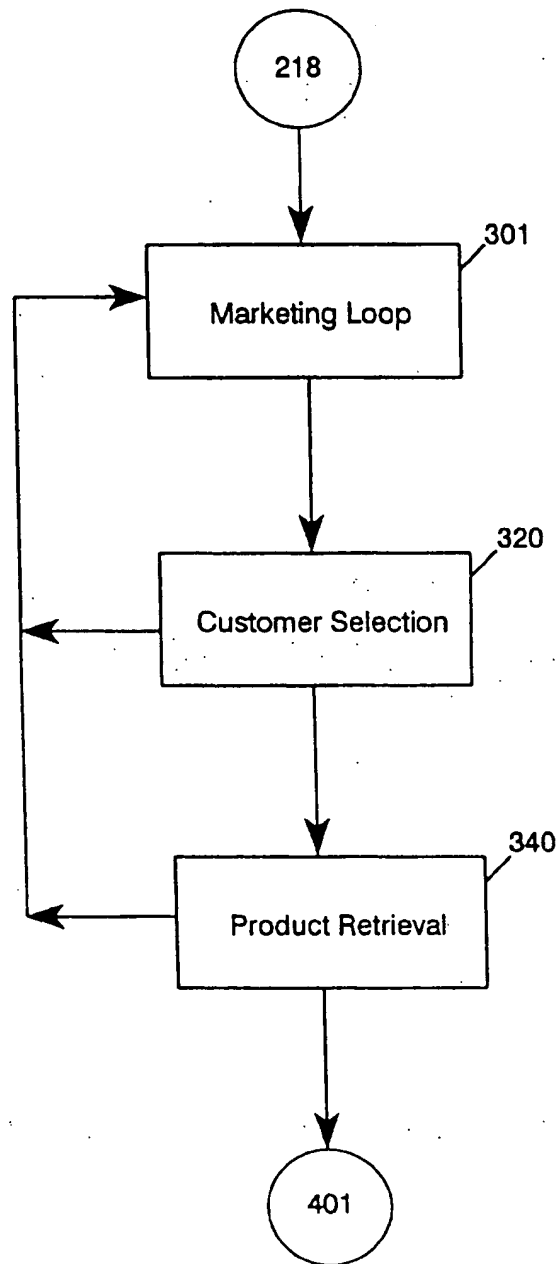


FIG. 28

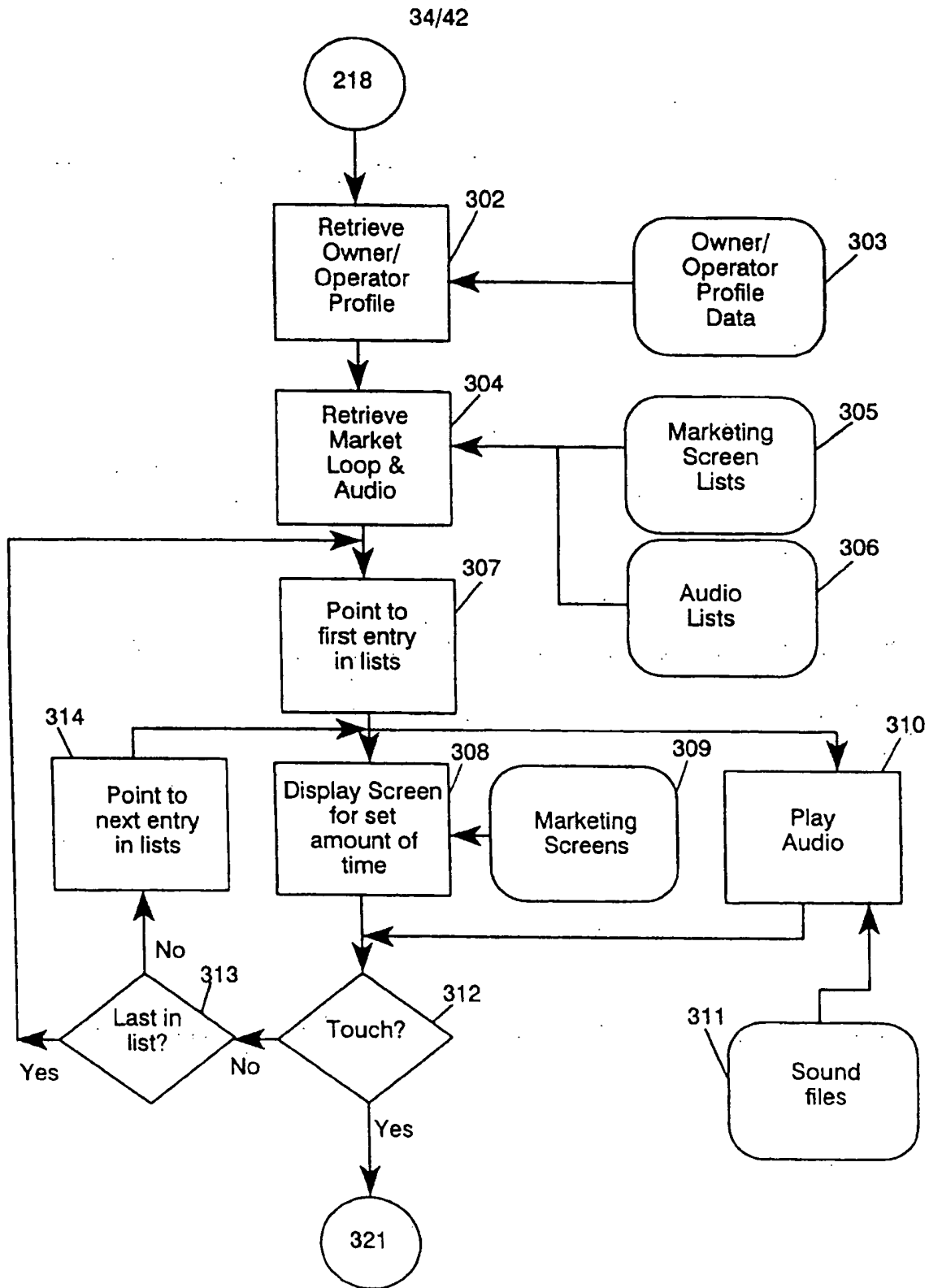


FIG. 29

35/42

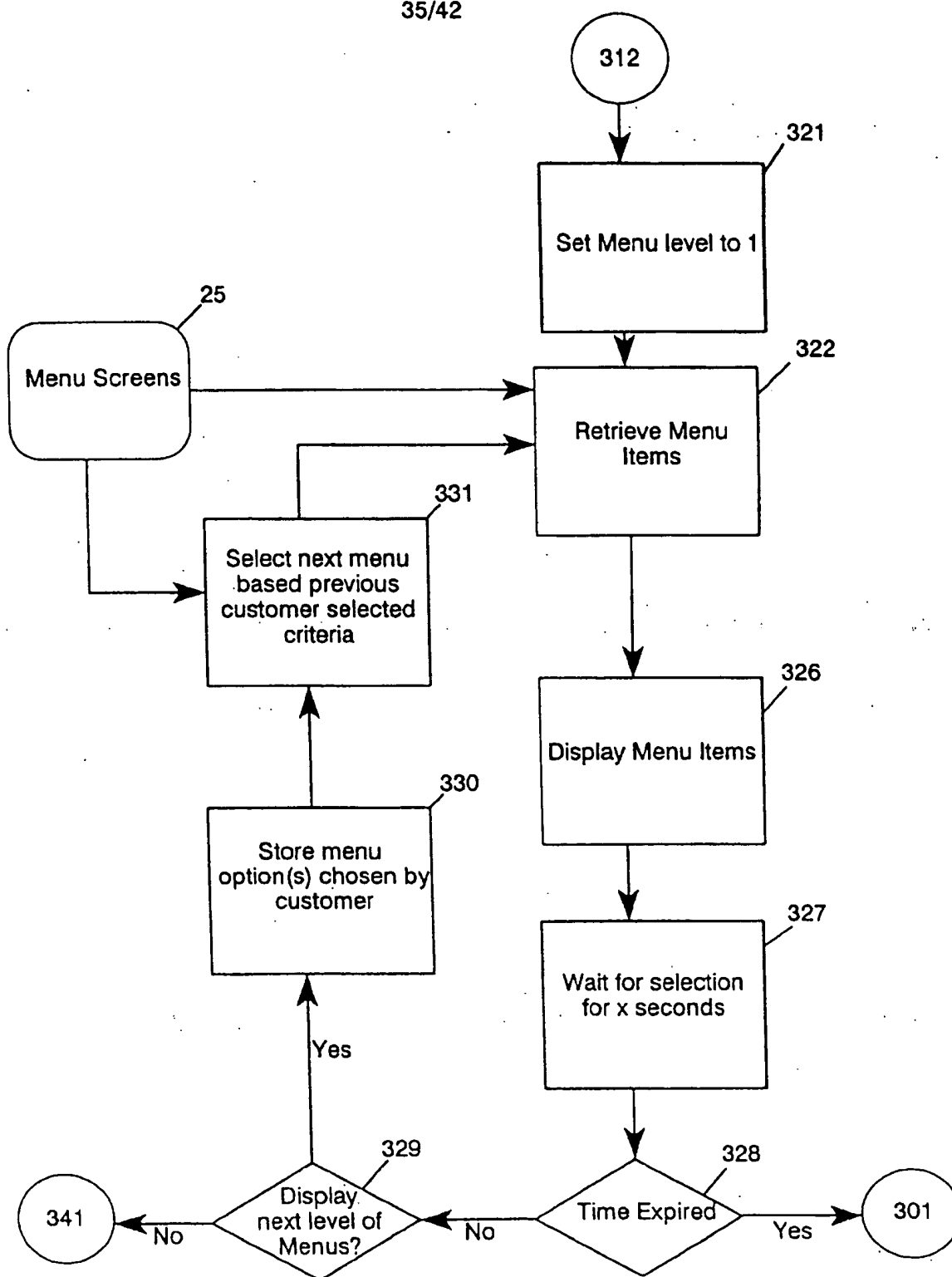
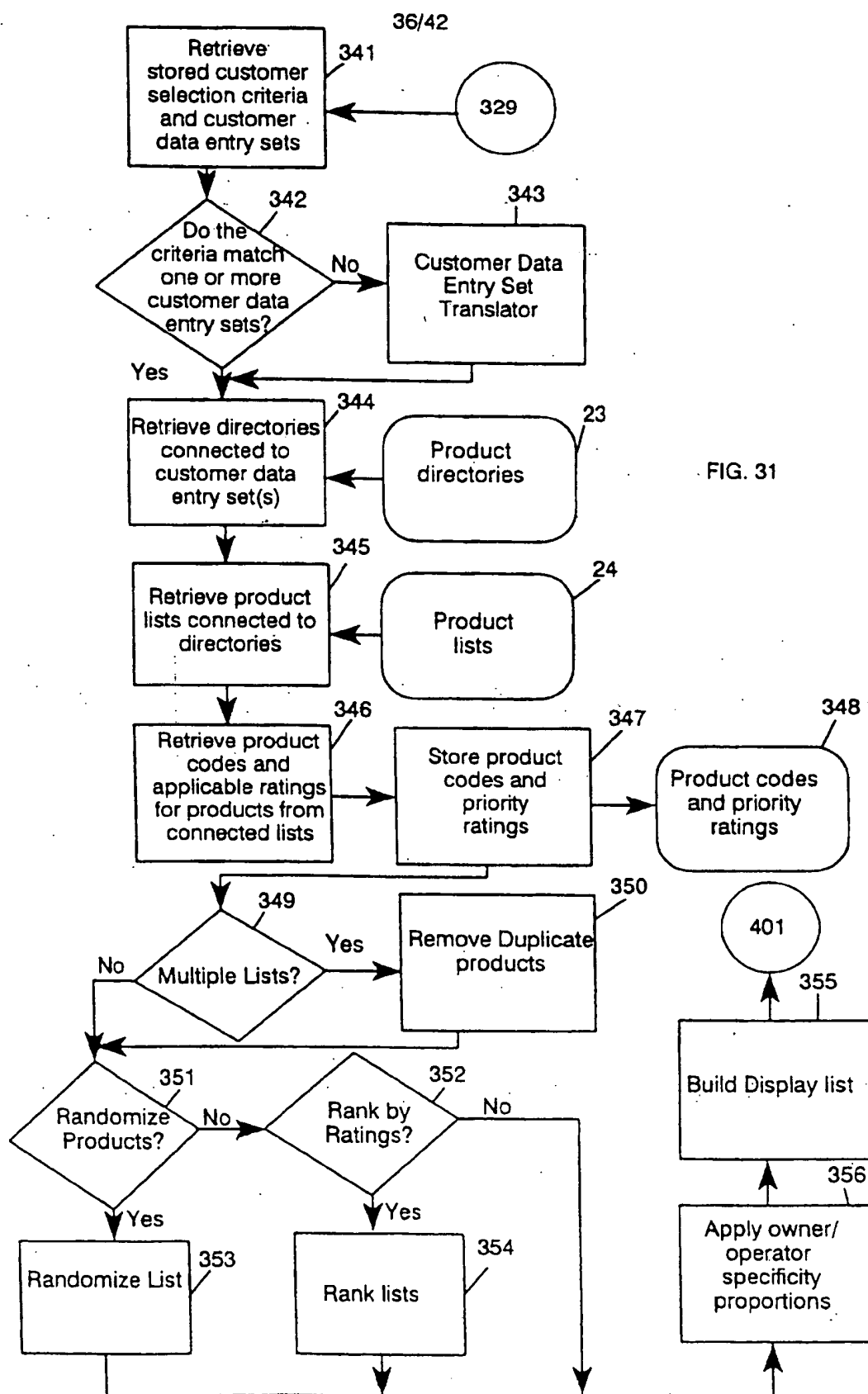


FIG. 30



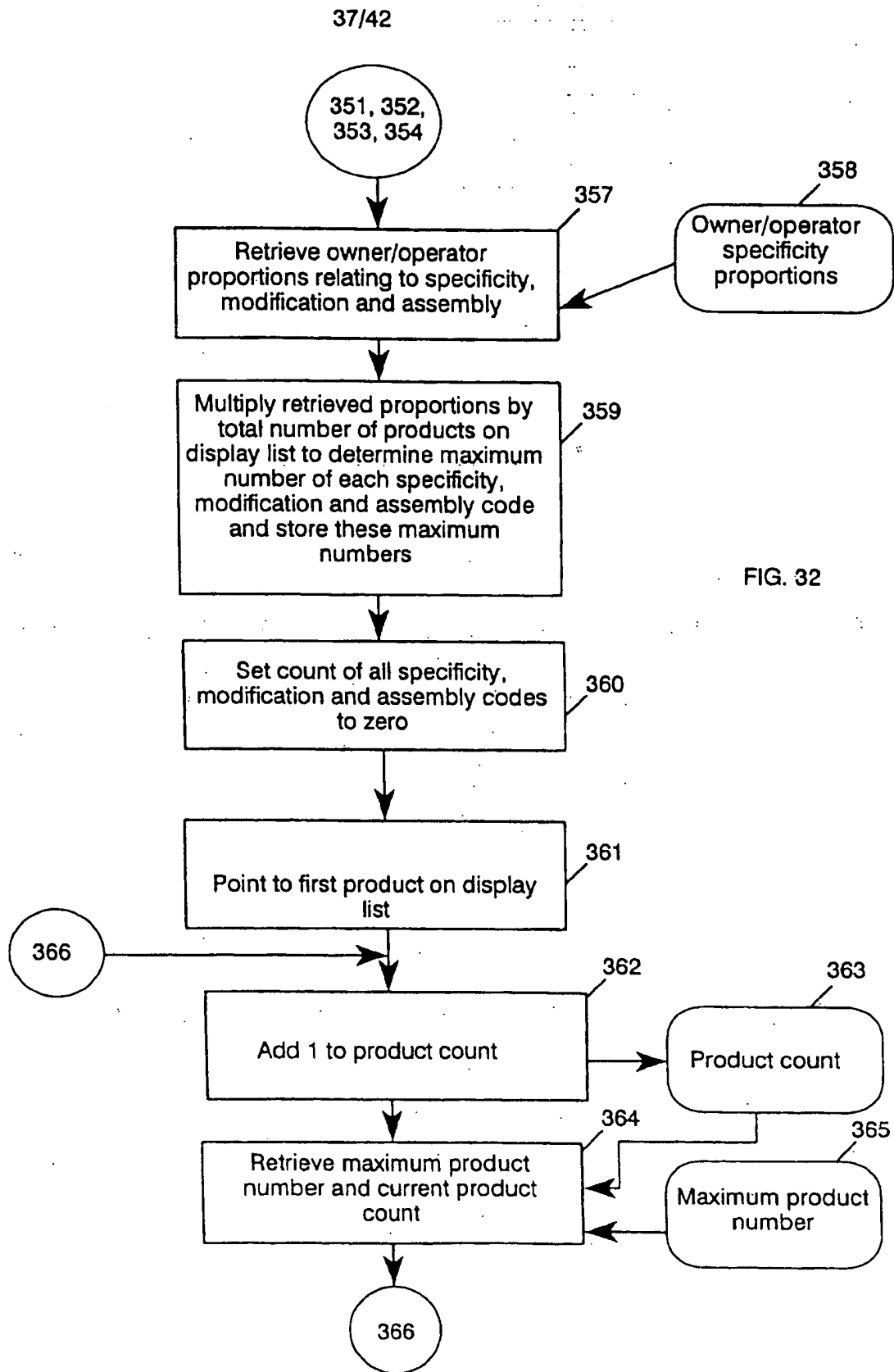


FIG. 32

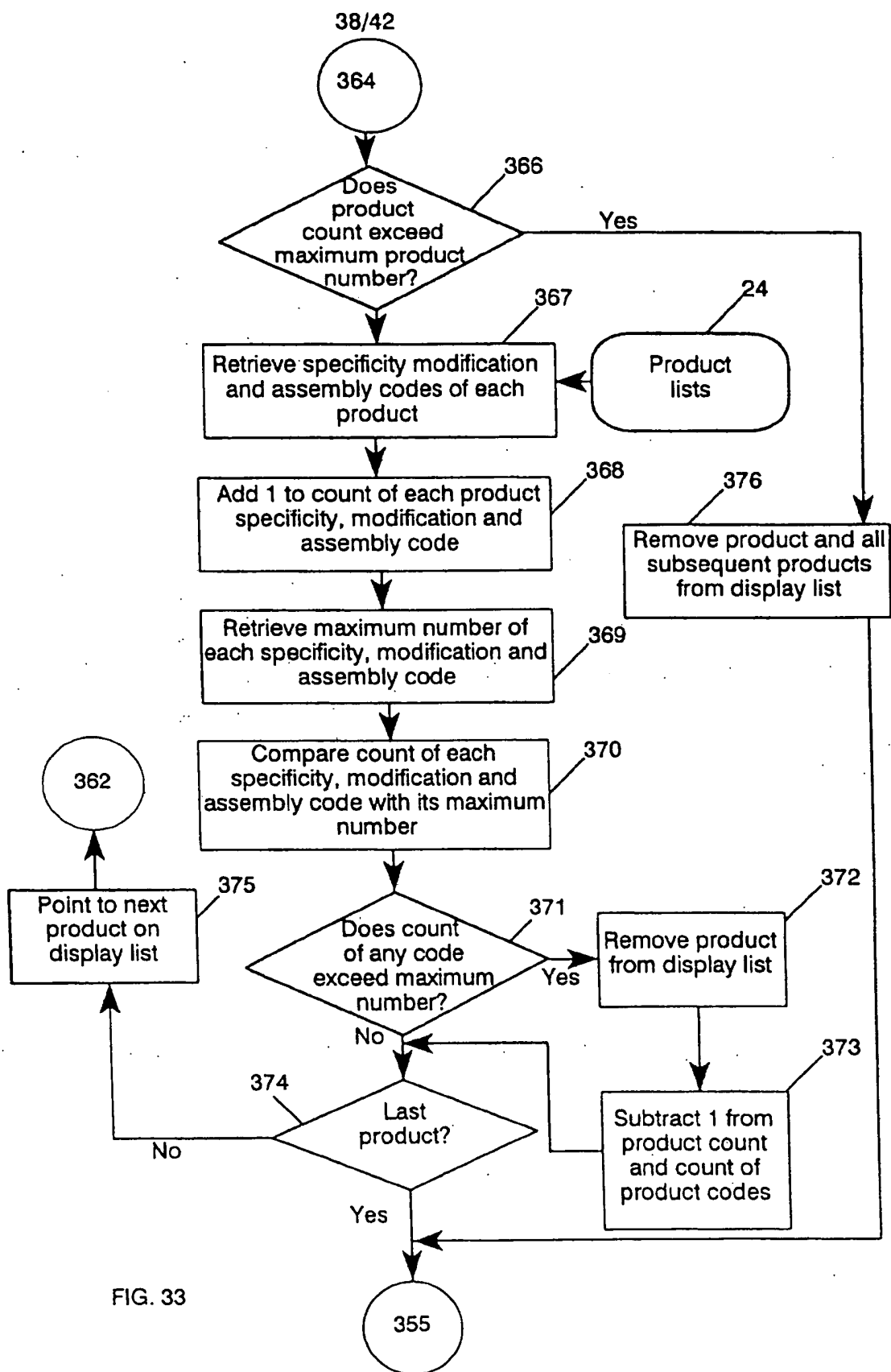
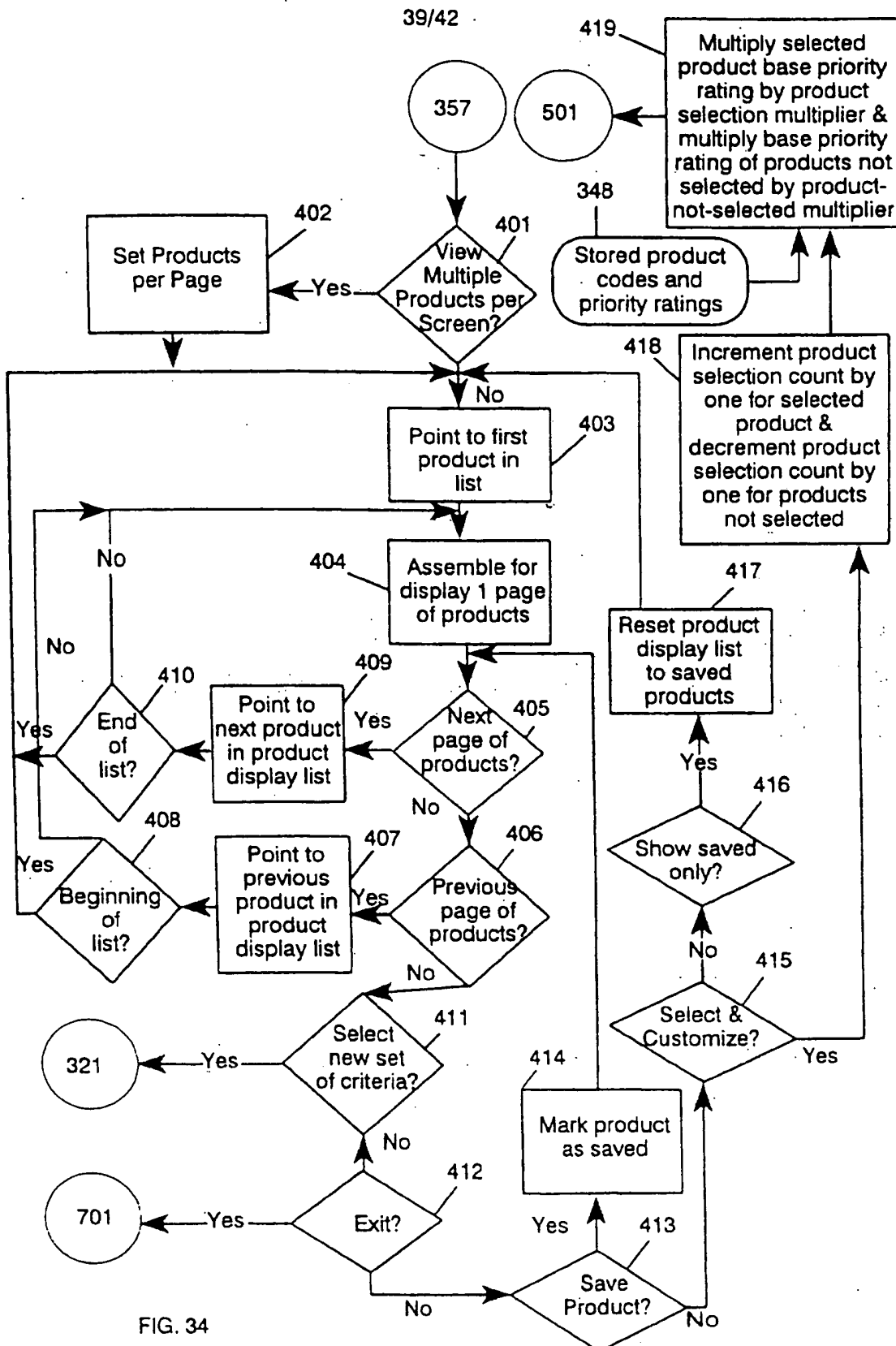
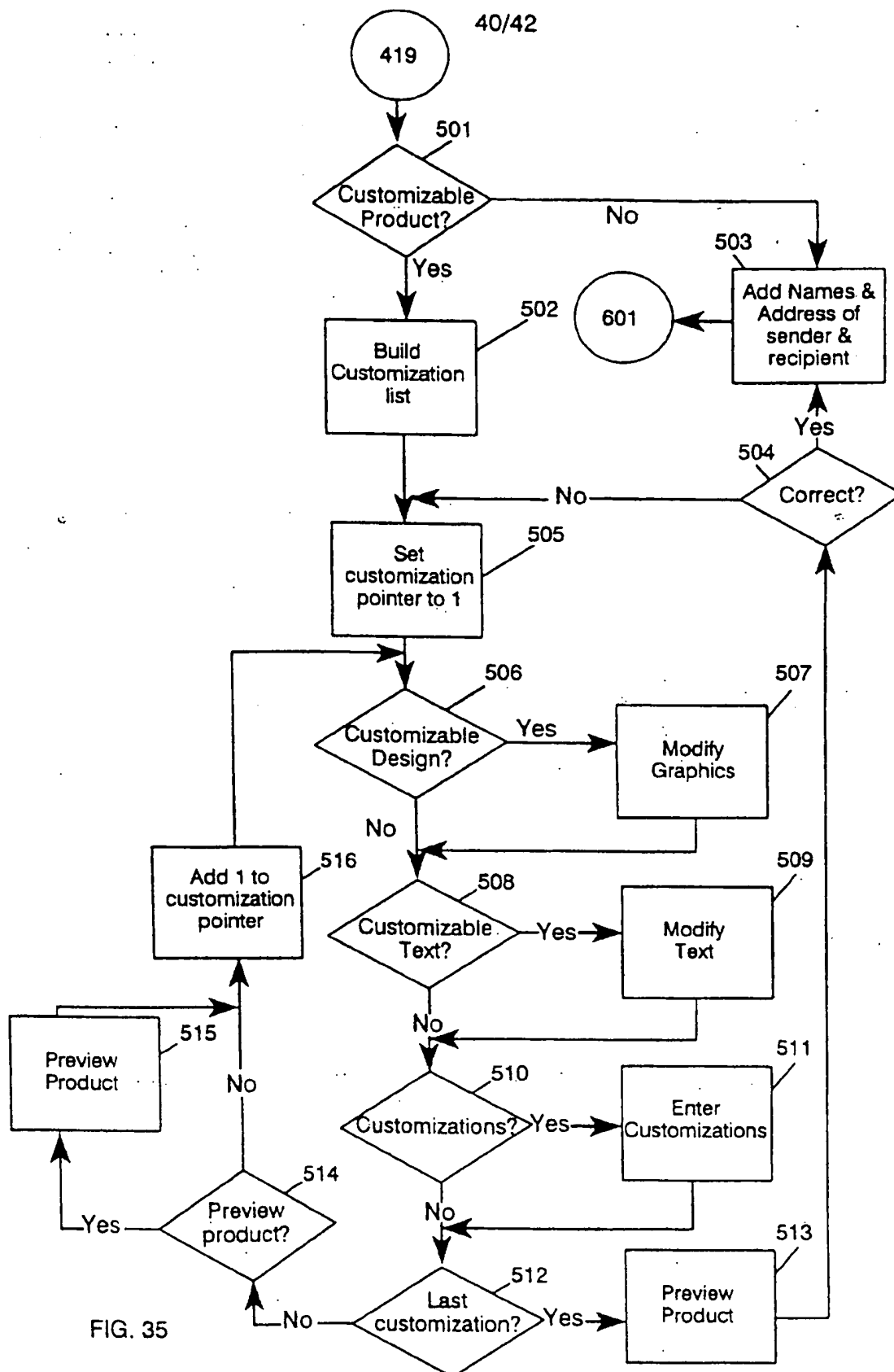


FIG. 33





41/42

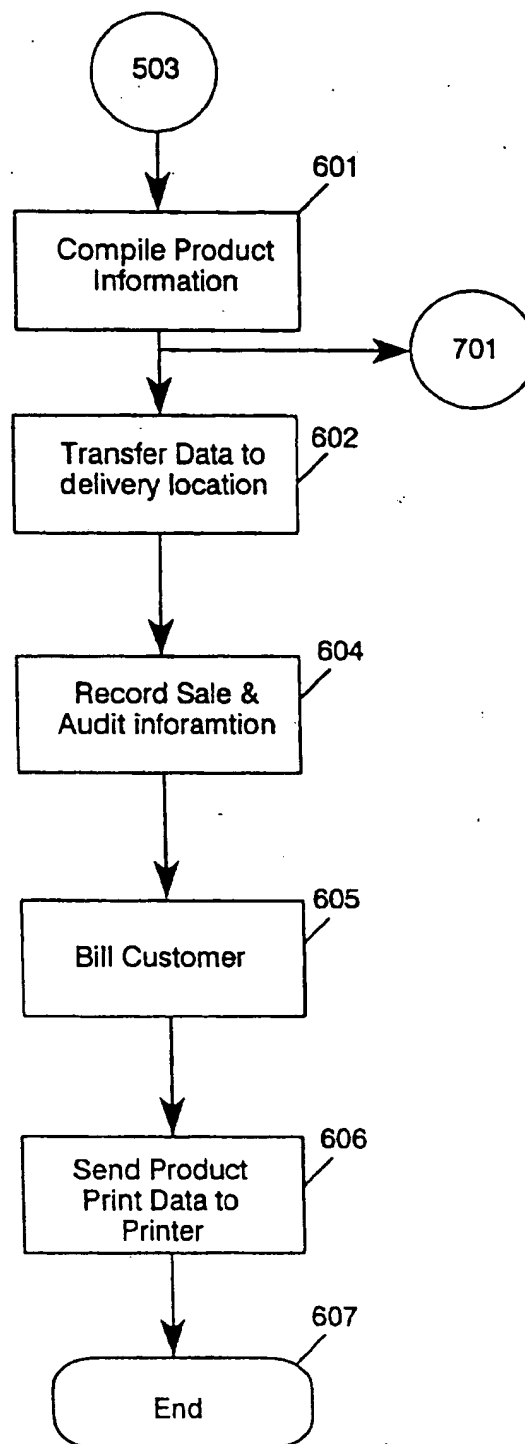


FIG. 36

42/42

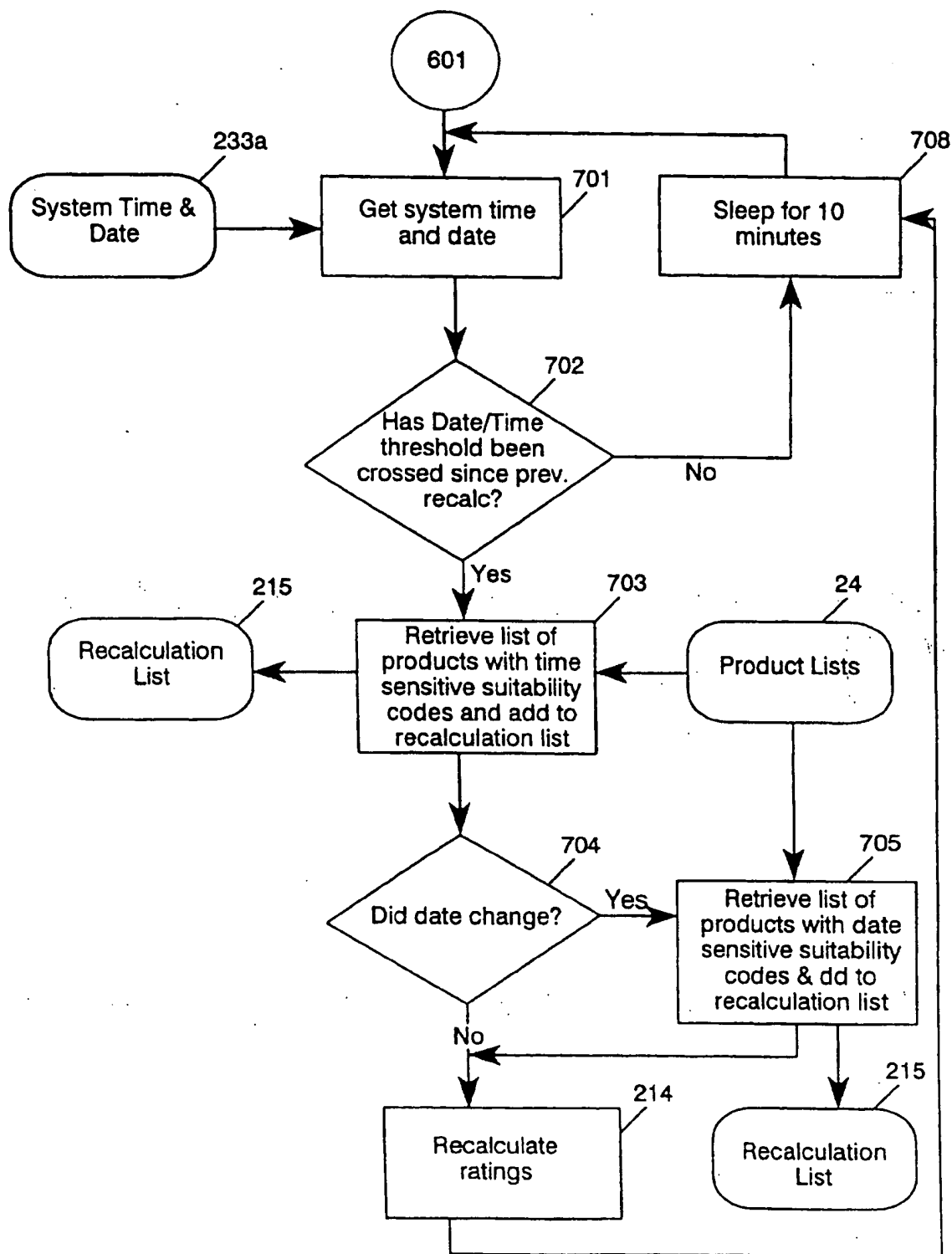


FIG. 37

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11181

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G06F 17/00

US CL : 364/479; 235/381

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 364/479, 468, 478, 401-403, 410; 235/381, 382, 379

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

search terms: priority, preference, greeting cards, customer or user, vending

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- A	US, A, 5,056,029 (CANNON) 08 October 1991, see columns 4-7 and figures 8-16.	1-12, 23-30, 32, 33, 45, 46, 58-65 and 73-77, 85 ----- 13-22, 31, 34-44, 47-57, 66-72 and 78-84.
A	US, A, 5,243,174 (VEENEMAN ET AL) 07 September 1993, see figures 10a-10c.	1-85
A	US, A, 5,036,472 (BUCKLEY ET AL) 30 July 1991, see figures 8-10 and cols 7-9.	1-85

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	* T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
* A		document defining the general state of the art which is not considered to be part of particular relevance
* E		earlier document published on or after the international filing date
* L		document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
* O		document referring to an oral disclosure, use, exhibition or other means
* P		document published prior to the international filing date but later than the priority date claimed
	* X	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
	* Y	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
	* &	document member of the same patent family

Date of the actual completion of the international search

07 NOVEMBER 1995

Date of mailing of the international search report

27 DEC 1995

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

ROY N. ENVALL, JR.

Telephone No. (703) 305-9706

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11181

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4,567,359 (LOCKWOOD) 28 January 1986, see figures 1 and 2.	1-85